SOCIOECONOMIC MONITORING GUIDELINES FOR COASTAL MANAGERS IN THE CARIBBEAN:

SOCMON Caribbean

FIRST DRAFT

[ADD COVER DESIGN]

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ACKNOWLEDGEMENTS

SocMon Caribbean is the product of substantial collaboration among social scientists and coastal managers in the region. In particular the SocMon Caribbean Advisory Board, which is a balance of social scientists and coastal managers, provided significant project direction and technical input.

The draft ***SocMon Caribbean*** was critiqued by an extensive network of reviewers. Particular appreciation goes to [ADD once review complete] for their insightful comments.

SECTION 1: WHAT IS THIS ALL ABOUT?

1.1 Why SocMon?

Coastal resource managers realize that coastal resources can no longer be managed from a biophysical focus alone. Community attitudes towards, and uses of, coastal resources have serious implications on the biophysical health of coastal marine systems. The management of coastal resources has equally serious implications on the socioeconomic health of the community. Socioeconomic information is critical for effective coastal management. For example:

- A no-fishing area is proposed in part of a larger fishery to protect a spawning aggregation and threatened habitat. The fishing community is protesting the zoning for fear of losing their livelihoods. Systematically collected information on fishing patterns, number fishers and fisher perceptions can help managers accurately determine who will be affected and identify acceptable alternative livelihood options.

- Policy-makers and the public want to know, "Has the marine protected area been effective?" Information on changes in people's perceptions of, compliance with, and enforcement of rules and regulations can indicate success or failure of management activities as well as the acceptability of the MPA.

- A major new education program is proposed for a coastal community. By understanding the means of communication in the community (e.g. billboards, television, newspaper), literacy and education levels of the various user groups and their perceptions of threats, the managers can tailor the program to employ the most appropriate communication mechanisms and ensure the messages are appropriate to existing awareness levels.

Clearly, to successfully manage coastal resources, managers must balance sustainable use, resource protection and conservation with their community's need for food security, livelihood and equitable resource use. They must recognize the close link between how a community uses coastal resources and the socioeconomic context of the community. Understanding this context is essential for assessing, predicting and managing coastal resource use. Socioeconomic information provides an understanding of the social, cultural, economic and political characteristics and conditions of individuals, households, groups, organizations and communities. It can help coastal managers identify potential problems and focus management priorities accordingly.
[ADD BOX: ***SocMon*** is a set of guidelines for establishing a socioeconomic monitoring program at a coastal management site in the Caribbean.]

1.2 What is SocMon?

SocMon is a set of guidelines for establishing a socioeconomic monitoring program at a coastal management site in the Caribbean. The guidelines provide a prioritized list of socioeconomic indicators useful to coastal managers as well as the questions for data collection and the tables for data analysis. It is expected that the guidelines will be tailored to each site's needs. ***SocMon*** is a companion to the ***GCRMN Socioeconomic Manual for Coral Reef Management.*** [ADD BOX: A socioeconomic monitoring program is a method for identifying, collecting and analyzing social, cultural, economic, and political data of people, groups, communities and organizations.]

SocMon is intended to:

a) Provide a methodology for regularly collecting basic socioeconomic data useful for coastal management at the site level;

b) Provide a basis for a regional system by which site-level data can feed into national, regional and international databases for comparison.

SocMon is also intended to provide managers, many of whom come from biology backgrounds, insight into what "socioeconomics" means, how socioeconomic information can be useful to their management, and what socioeconomic data might be useful for management at their site.

There are other existing socioeconomic programs in the region, which tend to be site specific. Your site may have a socioeconomic monitoring program currently in use. Social scientists have been conducting socioeconomic research throughout the region for decades. SocMon is intended to compliment these programs by providing a simple, standardized set of guidelines for the region.

1.3 How does SocMon work?

A socioeconomic monitoring program, as explained in this document, includes five key phases: 1) advance preparation, including identifying purposes of the socioeconomic monitoring, selecting the relevant indicators, defining the process to conduct the socioeconomic monitoring, identifying and consulting with stakeholders, and identifying the monitoring team, 2) data collection through secondary sources, 3) data collection through key informants, 4) data collection through household interviews, 5) data collection through observation, and 6) data analysis and communication. This is an iterative process, which will require flexibility and adaptability. The results of the phases will likely affect earlier decisions and may require repeating previous steps. [ADD FLOWCHART with these 6 phases with the data collection ones together with observation during the whole time – same flowchart will be used in section 3.2]

The ***SocMon*** indicators (see ***Section 4*** and ***Appendix A)*** are presented based on the means of data collection: secondary sources, key informants and household interviews. They were divided this way to correlate with the two types of interview guides: one for secondary sources and key informants, the other for household interviews. The indicators are also categorized according to whether they are of primary or secondary importance to collect (see ***Section 4***).

It is important to emphasize that ***SocMon*** is not a rigid set of guidelines. The user of ***SocMon***, the socioeconomic monitoring team, is expected to select indicators and methods appropriate to their site's needs as discussed in ***Section 4***.

1.4 Who is SocMon for?

The target audience for ***SocMon*** is coastal managers, including the staff managing coastal areas, local government authorities, non-governmental organizations, and local people (e.g. community organization, fisheries association). Secondary audiences include academics and international and regional organizations.

1.5 What are SocMon's limitations?

SocMon is a basic set of guidelines. It does not cover all the possible indicators for socioeconomic monitoring (e.g. it does not specifically discuss gender). It was designed to be a minimum set of prioritized indicators from which to work and was designed as a

companion to the ***GCRMN Socioeconomic Manual for Coral Reef Management***, which does provide detail on the full range of indicators possible for a socioeconomic assessment. It is, therefore, expected that the team will consult the ***GCRMN Manual*** (particularly ***Appendix A: Parameters***) if they decide to go beyond the indicators prioritized for ***SocMon.***

SocMon also does not provide detail on how to collect data (e.g. how to conduct an interview). This information is provided in the ***GCRMN Manual***, which includes comprehensive explanations of how to conduct socioeconomic data collection, including interviews and secondary data collection (see ***Chapter3: Field Data Collection***). It is, therefore, suggested that the reader use both of them – ***SocMon*** for what priority indicators to assess, the questions to ask and the tables to analyze the data, the ***GCRMN Manual*** for how to do it.

Finally, socioeconomic monitoring based on ***SocMon*** will not provide answers to all questions important for coastal management. However, it will provide coastal managers a better understanding of the current situation in the community and what to expect in the future.

SECTION 2: WHY SHOULD I DO THIS?

Socioeconomic information can be used by coastal managers for a number of purposes. It is important for the coastal manager and socioeconomic monitoring team to determine the relevant purpose(s) for their monitoring so that they can select the appropriate indicators for data collection. ***Section 4***, where the indicators are introduced and the process of selecting indicators is discussed, includes a table noting which indicators are important to collect for each purpose.

[BOX: These purposes are generic to the region and need to be tailored to the needs at each site]

2.1 Identifying threats, problems, solutions and opportunities

When collected as part of an ongoing monitoring program, instead of a one-time assessment, socioeconomic information can be used to identify trends and changes in community and household demographic and economic characteristics, coastal activities, and people's perceptions about coastal and community issues. These can be used to identify threats, problems, solutions and opportunities for coastal resource management. For example, an increase in in-migration of people to the area can indicate potential threats from increased fishing effort and land use development, such as cutting of mangroves.

2.2 Determining the importance, value and cultural significance of resources and their uses

Socioeconomic information can be used to demonstrate the importance and value of coastal resources and services – both natural and man-made -, such as coral reefs, mangroves and cultural traditions, to the general public, stakeholders groups and decision-makers, which can help generate greater support for coastal resource management programs. For example, an understanding of the value of coral reefs can be used to evaluate the benefits and costs of alternative development, management and conservation scenarios (e.g. a decision to allow diving in an area may be based on the expected occupations and income to the community from tourism activities).

2.3 Assessing positive and negative impacts of management measures

Socioeconomic information can be used to determine the impacts of management decisions on the stakeholders, which can help improve policy decisions to minimize negative impacts and maximize positive impacts to stakeholders. For example, a policy to restrict a certain type of fishing gear may affect occupational structure in the community and market value of fish. By documenting the changes in occupational structure and market value before and after the policy was implemented, the managers can better determine the effects of the policy. Similarly, managers can use socioeconomic information to predict the effects of alternative policies on the community. For example, by knowing the number of people fishing various areas, managers can predict how many fishers will be displaced by alternative no-fishing zones.

2.4 Assessing how the management body is doing (management effectiveness)

Socioeconomic information can be used to measure the effectiveness of coastal resource management programs in achieving their goals and objectives. For example, if a goal of the coastal resource management program is to improve the participation of

local stakeholders in the management process, then if the management body is effective, there should be improvements in people's perceptions of participation in coastal resource management decision-making.

Socioeconomic monitoring can allow for the improvement of coastal resource management through learning and adaptation and the diagnosis of specific issues influencing the success of the coastal resource management program in achieving its goals and objectives. For example, changes in people's perceptions of, compliance with, and enforcement of rules and regulations can indicate success or failure of the management activities and the possible need for a change in enforcement activities.

2.5 Building stakeholder participation and appropriate education and awareness programs

Socioeconomic information can be used to guide the incorporation of stakeholder group participation, concerns and interests in the management process. It can also be used to plan and direct education and awareness programs for coastal resource management. For example, the identification of community and stakeholder organizations in the area can assist coastal managers in ensuring that critical stakeholders have opportunities to participate in the coastal resource management process.

2.6 Verifying and documenting assumptions of socioeconomic conditions in the area, community dynamics and stakeholder perceptions

Socioeconomic data collection and analysis is important to scientifically verify and document the community conditions. With any natural resource management program, there are often widely held perceptions of the local conditions. For example, it may be generally agreed that the health of the mangroves is in decline. Managers need scientific data to prove and document this perspective. Without scientific proof, the statement is only a theory. Verification and documentation of peoples' perspectives is equally important for socioeconomic conditions, which are easily biased by peoples' concerns and values. By conducting a neutral, systematic study, the manager can determine the true local socioeconomic conditions, including resource use, community dynamics and stakeholder perceptions.

2.7 Establishing baseline household and community profile

Socioeconomic information collected at the start of a coastal resource management program can help the manager understand the community and households and establish baseline conditions for future comparison. This baseline information can be especially useful in adaptive management. As the goals and activities of the program change, the manager can compare current conditions with the baseline to identify causes of changes as well as effects of change. For example, if "support local traditions" was not one of the original goals of a coastal management program, then the status of local traditions may not have been monitored over time. However, by having a baseline set of information on local traditions, managers can refer to this initial set of information to assess how conditions have changed over time.

SECTION 3: WHAT'S INVOLVED?

3.1 Who should do the monitoring?

The socioeconomic monitoring can be undertaken by an individual, but ideally the socioeconomic monitoring will be conducted by a monitoring team led by someone from the coastal management staff (e.g. monitoring coordinator from MPA authority, education officer from environmental organization) with a background in one of the social sciences (i.e. sociology, anthropology, economics, political science, psychology, or geography). The involvement of a staff member in the socioeconomic monitoring is important for establishing long-term consistency and ensuring that the coastal management staff has access to the data for use in improving coastal management.

The team leader is responsible for planning the monitoring; collecting, analyzing and presenting the data; and ensuring the program continues over the long-term. The rest of the monitoring team assist with the data collection, particularly the interviews, analysis, report writing and presentations.

Ideally the team members will have a background in one of the social sciences. It would also be ideal if the team members were trained and experienced in conducting interviews in the area. Whether they have a social science background or not, it is important that the team members have good interpersonal skills, are motivated and analytical, and are interested in the project. Since most coastal management program staff have natural science degrees, ***SocMon*** was written assuming the team members have limited socioeconomic knowledge, but at least a high school level education.

If the leader and/or members have limited socioeconomic expertise, it is particularly important that they review the ***GCRMN Socioeconomic Manual for Coral Reef Management***, which provides a comprehensive review of how to conduct socioeconomic assessments. The ***GCRMN Socioeconomic Manual, Chapter 1, Identify the assessment team*** also provides tips on developing the team.

If there isn't a trained social scientist in the team, the socioeconomic monitoring can still be conducted. There are resources, including the ***GCRMN Socioeconomic Manual***, available for skill development (also see ***GCRMN Manual, References*** for additional sources). Experts from academic or research institutions can be consulted for guidance. As stated above, what is critical is motivation and interest.

3.2 What's the process for doing the monitoring?

As noted in section 1.3, there are generally five steps in conducting the socioeconomic monitoring, including:

1. Advance preparation, including identifying purposes of the socioeconomic monitoring, selecting the relevant indicators, defining the process to conduct the socioeconomic monitoring, identifying and consulting with stakeholders, and identifying the monitoring team (see ***GCRMN Manual, Chapter 1: Preparatory Activities & Chapter 2: Reconnaissance & Planning***).
2. Data collection through secondary sources
3. Data collection through key informants
4. Data collection through household interviews
5. Data collection through observation
6. Data analysis and communication

[ADD FLOWCHART (same as Section 1.3) with these 6 phases with the data collection ones together with observation during the whole time]

This is an iterative process that needs to be repeated over time to update and add new data and information. It is also a process that must be flexible as the steps involved in the actual socioeconomic monitoring do not always follow this process directly and often need to be repeated. New information may create new requirements, so the team should review progress and change plans to fit the new conditions.

3.3 How do I collect the data?

The indicators presented in ***SocMon*** are divided into four main methods of data collection:

1. secondary sources
2. key informant interviews
3. household interviews
4. observation

Generally, data should be collected from secondary sources first, followed by key informant interviews. Household interviews are conducted to obtain more specific data about individuals and households in the community. Observation is on-going while in the community. These methods are discussed in detail in the ***GCRMN Manual, Chapter 3: Field Data Collection***.

[BOX: The team should follow the following guiding principles throughout the data collection:
- respect the stakeholders and community, such as work schedules, local customs, and religion.
- recognize informant biases.
- address gender issues
- reach less accessible areas
- address language differences
- take detailed notes

These and other guiding principles for field data collection are more fully discussed in the ***GCRMN Manual, Chapter 3: Field Data Collection.***]

3.3.1 Secondary data

The monitoring team should start by conducting a thorough assessment of all relevant secondary data on the identified indicators. Secondary data are those that have already been collected, analyzed and published in various forms, including:

- official and unofficial documents;
- statistical reports;
- reports of previous assessments and surveys;
- research reports;
- documentation of previous or ongoing projects, including monitoring and evaluation reports;
- maps;
- aerial photographs and satellite images;
- historical documents and accounts; and
- websites on the internet.

The assessment of secondary data involves compiling, evaluating and reviewing the data related to the indicators.

2.7.1 Key informant interviews

Key informants are individuals who, because of their position, experience and/or knowledge can provide insight and information into the larger population and/or a particular group. For example, the village chief can provide insight into the entire community, the president of the fishermen's association can provide insight into fishermen's activities and the minister of the local church can provide insight into Christians' perceptions in the community. Key informants can, therefore, provide common knowledge, shared knowledge, and specialized knowledge. Because it is often not possible to speak with everyone in the study area, these individuals with experience and knowledge are often sought. They are often used when the team does not need to know the perspective at the individual level. For example, the team does not need to interview community members to determine whether or not there is a fisheries management plan; instead, they can ask the Fisheries Office Director. Most of the indicators collected using key informants address basic facts (e.g. demographics of the community, existence of a formal management body). It is important to interview several key informants to gain a breadth of perspective. A rule of thumb to determine when enough key informants have been interviewed regarding a particular indicator is when the answers to the same questions become repetitive. For example, if the team is asking about the types of activities in the study area, when the responses are all noting the same activities, then the team can stop interviewing key informants about this question.

3.3.3 Household interviews

The ***SocMon*** household interviews involve questionnaires with highly structured, close-ended questions. The questionnaire has specific questions with limited answers (e.g. multiple choice, yes/no) resulting in quantitative data that can be analyzed statistically. Household interviews are important for understanding individuals' perspectives. For example, if the team wants to understand what people think about coastal management practices, then they need to ask a spectrum of people. Most of the indicators studied through household interview address perceptions (e.g. non-market and non-use values, perceived community problems). The household interviews have the advantage that they do not need a highly trained person to administer the questionnaire, are relatively easy to administer, and require little time compared to key informant interviews. However, the household interviews have the disadvantage that they have limited boundaries of inquiry, it is difficult to determine if the informants are providing information they think the interviewer wants to hear, and it is difficult to ask questions about sensitive issues such as income.

3.3.4 Observation

In some cases data can be collected through observation. Observations are qualitative descriptions of what the team member sees and are obtained by attentively watching and recording the surroundings. For example, a team member may collect information on material style of life by observing a respondent's house and noting roof, wall, floor and window construction materials. Observation is a useful method because the team can learn first hand information about complex activities, such as fishing patterns.

3.4 Who should be interviewed for the household interviews?

The monitoring team should develop their sampling approach to determine who to interview for the household interviews. The ***GCRMN Socioeconomic Manual, Appendix***

B: Sampling Approaches provides a comprehensive explanation of how to select the appropriate number of people to interview and how to identify the people to interview . (both randomly and non-randomly). The team might also discuss plans for sampling and sample size with the statisticians at the central statistical office or nearby university.

An important decision is whether to interview a random or non-random sample of people. This decision will depend on whether the results need to be statistically representative of the community. If they do, then it is important to collect a statistically representative sample of people through random sampling (see the ***GCRMN Manual: Appendix B*** for a sampling table***)***. In cases where the team does not need a statistically representative sample of the population, then smaller sample sizes may be used. Although not statistically representative of the entire population, the results will provide a useful understanding of the population. In these cases, the following sample sizes are suggested:

Population	***Sample Sizes***
100	25
200	40
300	60
400	60
500	80
1000	100

Regardless of random or non-random sampling, it is important to sample from the different types of stakeholder groups to ensure the breadth of perspectives. The information collected from the secondary sources and key informant interviews can be useful for ensuring the breadth of people in the community are interviewed. The secondary and key informant data will include information on the different types of stakeholders in the community as well as distribution of basic demographics, including age, gender, education, ethnicity, and religion. The team needs to interview people from approximately the same proportions from these groups. For example, if there are 30% Hindus, 40% Muslims and 30% Christians in a community, then the team needs to conduct interviews with approximately these same percentages of people.

3.5 How long should the monitoring take?

The time it will take to conduct each socioeconomic assessment will vary depending on the situation, including the size of the community, skills and resources of the team, size of the team, and number of indicators selected. The first time will generally take the longest, since the process is new and the list of indicators may be longer than those selected for future monitoring. Overall, it is generally estimated it will take between three to six weeks (17 to 30 actual working days) to conduct the monitoring as follows:

Preparatory activities: 3 - 5 days
Data collection through secondary sources: 3 - 5 days
Data collection through key informants: 3 - 5 days
Data collection through household interviews: 5 - 10 days
Data analysis, report writing, presentations and consultations: 3 - 5 days

These actual working days may be spread out over a longer period as each activity may not follow directly after the other. The actual number of days will also depend upon the situation and the resources available.

3.6 How much will the monitoring cost?

The budget will also vary depending on site needs, existing resources and local costs. Generally it is expected that the budget items will include, but not be limited to:

- Transportation to government offices for collection of secondary data
- Salary for 3-4 interviewers
- Pen, paper, notepads, other office supplies
- Maps, nautical charts,
- Transportation to study area (car, boat)
- Photocopying
- Computer with basic word processing software
- Optional: camera, binoculars, tape recorder, video camera, Geographic Position System

3.7 How often should the monitoring be done?

Typically a socioeconomic monitoring program begins with a baseline socioeconomic assessment using the full range of indicators, which provides a foundation of data for future reference. The subsequent monitoring efforts may involve a shorter list of indicators than the baseline monitoring as some indicators should be collected on a more frequent basis than others. ***Tables 4.1*** and ***4.2*** in ***Section 4***, where the indicators are introduced, gives suggested frequency of data collection for each indicator which ranges from a minimum of every 2 to 5 years. The team will need to determine the most appropriate frequency depending on the situation and data needs for management. In areas where there is a high rate of demographic and economic change, the data may need to be collected on a more frequent basis to assess trends, while in more stable communities, the data may not need to be collected as frequently.

3.8 Where should the monitoring take place?

The data collection will generally take place in two places:

- Outside of the community – the secondary source data is typically located in government, academic, research, non-government organization and other offices, which are usually outside of the community.
- Inside the community – the key informant interviews, household interviews and observation will be conducted in the community.

3.9 What is the audience for the results?

Before undertaking the socioeconomic monitoring effort, it is important to identify the audience for the results. By understanding the target audience for the socioeconomic information, the process and results can be oriented in such a way as to effectively generate and communicate results.

In determining the audience, it is important to consider who will be affected by the results (both positively and negatively). Who is affected may depend upon the purposes of socioeconomic information as discussed in ***Section 2: Why Should I Do This?*** For example, if the purpose of the monitoring is to assess how the management body is doing, then the management body will be the audience as well as anyone else who is interested in their effectiveness, such as the agency overseeing the management body

(e.g. National Parks Trust), the general public, and particular stakeholder groups (e.g. fishermen, tourism operators).

It is also important to consider who can take action related to the results. For example, if the purpose is to build stakeholder participation, then the stakeholders are an important part of the audience.

Finally, it is important to consider who needs to be kept informed of coastal management activities and the related socioeconomic conditions. In some cases this may be the entire community, in other cases particular government agencies or advisory boards.

3.10 What else should I know?

It is important to identify any development projects or studies that have been conducted recently that may have included a socioeconomic analysis. The results of these analyses could be used within the current analysis, to prevent duplication, and as data for comparison. If there are any on-going activities in the area conducting a socioeconomic analysis, it is important to determine if the analysis is relevant to the socioeconomic monitoring and attempt to integrate or merge the activities. This is particularly important to minimize intrusion into communities. It is not uncommon for community members to get interview fatigue from being interviewed too much.

As noted in the ***Section 1***, this document is designed to be used in conjunction with the ***GCRMN Socioeconomic Manual for Coral Reef Management.*** It is particularly important to review ***Chapter 1: Prepatory Activities*** and ***Chapter 2: Reconnaissance and Planning*** before starting the data collection. ***Chapter 3: Field Data Collection*** is also critical for understanding how to conduct interviews.

SECTION 4: WHAT DATA DO I COLLECT?

[BOX: To set the context for the data collection, the team first needs to develop an understanding of the study area (KS1), stakeholders (KS2), population (KS3), number of households (KS4) and activities (KS15). These indicators may be more fully assessed during the interviews; however, in order to determine where to conduct the study and how many people to interview, these four indicators need to be at least preliminarily determined.]

[BOX: For the first assessment, the team may need to collect data on more indicators than for the subsequent monitoring. Typically a baseline assessment is conducted using a full range of indicators, which provides a foundation of data for future reference. The subsequent monitoring may involve a shorter list of indicators than the baseline monitoring as some indicators should be collected more frequently than others. See Table 1 below as a reference for when to collect data on which indicators.]

4.1 What are the indicators?

SocMon is focused on 60 socioeconomic indicators, which are presented according to the means of data collection: secondary sources, key informants or household interviews. ***Appendix A*** provides detailed information on each of the indicators, including what it is, how to collect it, how to analyze it, and how the resulting information can be useful to managers. For more extensive descriptions of these indicators and how to conduct interviews see the ***GCRMN Socioeconomic Manual, Appendix A*** and ***Chapter 3, Semi-Structured Interviews***.

[BOX: Observation is not specifically noted for any of the indicators because it is important for all of them. The monitoring team is expected to use observation as a cross-check on the data collected through the secondary sources, key informant interviews and household interviews.]

A few of the indicators, such as age, gender and education, are collected through key informants/secondary sources as well as through household interviews. This is done to cross-check the results and also because the two sets of data complement each other. The key informant/ secondary source data provide community-level, aggregate information useful for assessing changes and trends over time; whereas, the household interview data provide more precise information on the various stakeholder groups . For example, the community-level information on occupation and demographics provides an overall understanding of what percentage of the community is employed in each occupation and what percentage of the community is in which age group, level of education, etc. In contrast, household information on occupation and demographics can be used to determine the ethnicity of stakeholders, such as fishers and tour guides.

Tables 4.1 and ***4.2*** list the indicators according to category and means of data collection. The tables note particularly useful aspects of each indicator, including the main means of data collection, minimal frequency of data collection and general importance of data collection.

Table 4.1

Key Informant Interviews/ Secondary Sources(KS)		***Main means of data collection (secondary sources, key informants or both)***	***Minimal frequency of data collection in years***	***General importance of data collection (primary or secondary)***
Community-level Demographics				
KS1.	Study area	Secondary sources	5	Secondary
KS2.	Stakeholders	Secondary sources	5	Secondary
KS3.	Population	Secondary sources	5	Primary
KS4.	Number of households	Secondary sources	5	Primary
KS5.	Migration rate	Secondary sources	5	Secondary
KS6.	Age	Secondary sources	5	Secondary
KS7.	Gender	Secondary sources	5	Secondary
KS8.	Education	Secondary sources	5	Secondary
KS9.	Literacy	Secondary sources	5	Secondary
KS10.	Ethnicity	Secondary sources	5	Secondary
KS11.	Religion	Secondary sources	5	Secondary
KS12.	Language	Secondary sources	5	Secondary
KS13.	Occupation	Secondary sources	3	Primary
Community Infrastructure				
KS14.	Community infrastructure	Secondary sources	5	Secondary
Coastal and marine activities				
KS15.	Activities	Both	2	Primary
KS16.	Goods and services	Both	2	Primary
KS17.	Types of use	Both	2	Primary
KS18.	Value	Both	2	Primary
KS19.	Market orientation	Both	2	Primary
KS20.	Use patterns	Both	2	Primary
KS21.	Levels & types of impact	Both	2	Primary
KS22.	Level of use by outsiders	Both	2	Primary
KS23.	Household use	Both	2	Primary
Governance				
KS24.	Management body	Both	3	Secondary
KS25.	Management plan	Both	3	Secondary
KS26.	Enabling legislation	Both	3	Secondary
KS27.	Resource allocations	Both	3	Secondary
KS28.	Formal tenure and rules	Both	3	Secondary
KS29.	Informal tenure and rules, customs and traditions	Both	3	Secondary
KS31.	Level of participation	Both	3	Secondary
KS32.	Community and stakeholder organizations	Both	3	Secondary

Table 4.2

Household Interviews(H)		***Minimal frequency of data collection in years***	***General importance of data collection (primary or secondary)***
Household demographics			
H1.	Age	5	Secondary
H2.	Gender	5	Secondary
H3.	Ethnicity	5	Secondary
H4.	Education	5	Secondary
H5.	Religion	5	Secondary
H6.	Language	5	Secondary
H7.	Occupation	5	Secondary
H8.	Household size	5	Secondary
H9.	Household income	3	Secondary
Coastal and marine activities			
H10.	Household activities	2	Secondary
H11.	Household goods and services	2	Secondary
H12.	Types of household uses	2	Secondary
H13.	Household market orientation	2	Secondary
H14.	Household uses	2	Secondary
Attitudes and perceptions			
H15.	Non-market and non-use values	3	Secondary
H16.	Perceptions of resource conditions	3	Secondary
H17.	Perceived threats	3	Secondary
H18.	Awareness of rules and regulations	3	Secondary
H19.	Compliance	3	Secondary
H20.	Enforcement	3	Secondary
H21.	Participation in decision-making	3	Secondary
H22.	Membership in stakeholder organizations	3	Secondary
H23.	Perceived coastal management problems	3	Secondary
H24.	Perceived coastal management community solutions	3	Secondary
H25.	Perceived community problems	3	Secondary
H26.	Successes in coastal management	3	Secondary
H27.	Challenges in coastal management	3	Secondary
Material style of life			
H28.	Material style of life	3	Secondary

4.2 Which indicators do I use?

If it is not possible to assess all of the indicators in ***SocMon***, then it is recommended that the monitoring team prioritize indicators based on the following considerations:

4.2.1 Purposes of the socioeconomic information

Most importantly, the team needs to clarify why the data is being collected, specifically how it will be used once collected. For example, if the team is most concerned about identifying threats, then they might focus on the indicators listed for identifying threats.. ***Section 2*** discusses the various purposes of collecting socioeconomic information. The indicators prioritized for data collection in ***SocMon*** were selected because they address these purposes. ***Table 4.3*** notes which indicators are relevant to which purposes so that the team can easily identify which indicators are relevant to their needs. A discussion of how the indicators can be used to understand each of these purposes is provided in the ***How Managers Can Use This Information*** section of each indicator in ***Appendix A.***

Table 4.3 [REPLACE WITH MATRIX]

Purposes of Socioeconomic Information	**Relevant Indicators for Data Collection [EDIT INDICATORS TO CORRECT NAMES AND/OR PUT NUMBERING?]**
Identification of threats, problems, solutions and opportunities	
Threats	study area, population, number of households, migration, types of use, use patterns, levels & types of impacts, perceptions of resource conditions, perceived threats, occupational structure, community infrastructure (sewage treatment)
Problems	use patterns, levels of use by outsiders, community infrastructure (ice for fishermen, banking services, hard top roads), compliance, enforcement, perceived coastal management problems, perceived coastal management solutions, perceived community problems
Solutions and opportunities	perceived coastal management solutions, successes in coastal management, challenges in coastal management
Determining the importance, value and cultural significance of resources and their uses	
Importance/value	occupational structure, value, market orientation, household income, non-market and non-use values, levels of use by outsiders, level of participation
Cultural significance	informal tenure and rules, customs and traditions
Assessing positive and negative impacts of management measures	
Livelihood	population, occupational structure, community infrastructure, religion, ethnicity, education, literacy, activities, types of use, value, goods and services, material style of life
Marketing and production	goods and services, value, market orientation, types of uses
Food security	goods and services, value, market orientation, types of use
Attitudes and perceptions	non-market and non-use values, perceptions of resource conditions, awareness of rules and regulations, compliance, perceived coastal management problems, perceived coastal management solutions, perceived community problems, challenges in coastal management, successes in coastal management
Coastal activities	occupational structure, types of uses, use patterns, levels of impacts, perceived threats
Governance	enforcement, formal tenure and rules, management plan, enabling legislation, management body, resource allocations, informal tenure and rules, customs and traditions
Assessing how the management body is doing	

Management effectiveness	Challenges in coastal management, successes in coastal management, types of use, use patterns, levels of impacts, community organizations, level of participation
Building stakeholder participation and appropriate education and awareness programs	
Stakeholder participation	population, age, gender, religion, ethnicity, education, literacy, types of use, levels of use by outsiders, perceived threats, awareness of rules and regulations, compliance, community and stakeholder organizations, level of participation, successes in coastal management, challenges in coastal management
Awareness program	migration, community infrastructure (newspapers, internet access, telephones, television, radios), types of use, levels and types of impacts, levels of use by outsiders, non-market and non-use values, perceptions of resource conditions, perceived threats, awareness of rules and regulations
Verifying and documenting assumptions of socioeconomic and resource use in the area, community dynamics and stakeholder perceptions	
	All indicators
Establishing baseline household and community profile	
	All indicators

4.2.2 General importance of data collection

In some cases the purpose(s) of the socioeconomic monitoring may not be clear and available time and resources may not allow the team to assess all the indicators. For these situations, the indicators were categorized according to what are generally considered to be the most important indicators to collect (primary indicators) and second most important to collect (see ***Tables 4.1*** and ***4.2***). The primary indicators were selected based on: 1) usefulness to management (frequency in ***Table 4.3***); 2) ease of data collection; and 3) likelihood of providing new information. Because household interviews are much more time consuming than key informants and secondary sources, only the key informants/secondary source indicators were considered for primary level of data collection.

4.2.3 Site-specific conditions

Perhaps most importantly, the team needs to select indicators based on local issues of importance in the study area. For example, if waste management is an important issue, then the team may want to prioritize community infrastructure and add more questions specific to waste disposal practices.

The team also needs to consider expected future changes in management and in the community. For example, if tourism is increasing, then the team may want to add more questions related to the tourism industry and its impacts.

SECTION 5: WHAT DO I DO WITH THESE DATA?

5.1 Analysis

The final analysis is typically conducted as a team. The team can come together at one or several meetings to review and validate the data, discuss and refine key learning, interpret the results, validate the key learning, and plan communication of results. Much of the data analysis, particularly of qualitative data, should have been completed during the field analysis.

[BOX: Key learning refers to issues identified or lessons learnt by the team that are essential to the purposes of the monitoring or are needed to understand the socioeconomic context of the stakeholders. ***See GCRMN Socioeconomic Manual, Chapter 4. Final Data Analysis*** for more information on key learning and basic principles for analysis.]

There are several critical steps the team should conduct together for the data analysis:

1. ***Compile all the data*** by gathering all the completed secondary sources and key informant interview guides and household interview guides in ***Appendices B &C***.
2. ***Prepare the data*** by transferring the collected secondary source, key informant interview and household interview data to the analysis sheets in ***Appendices D & E***.
3. ***Interpret the data*** by reviewing the results from the analysis sheets to identify and organize information related to the originally identified purposes of the socioeconomic monitoring (see ***Section 2: Why Should I Do This?***). The team should select the data relevant to the purposes of the monitoring (see ***Table 4.3*** in ***Section 4*** to determine which indicator data are useful for analyzing which purpose). These data then need to be reviewed, correlated and contrasted to identify emerging patterns and trends. These patterns and trends become key learning. The results are then compiled to identify data that support the key learning. For example, if the purpose of the monitoring is to identify socioeconomic impacts of a no-fishing regulation, then two of the indicators of interest are ***occupation*** and ***activities***. For the analysis, there may be trends in changes in occupations and activities as people shift from fishing to other occupations and activities. If there are shifts out of fishing, a key learning may be that the regulation has had an impact on fishing activities as seen by people are leaving fishing as an occupation. The results on occupation and activities would support this key learning. By reviewing, correlating and contrasting these different pieces of data, it is possible to identify changes in each of the indicators. For each indicators there is a discussion of how to analyze and the use the information in ***Appendix A***.
4. ***Agree on key learning*** by agreeing on the most important key learning to highlight and selecting the information to support the key learning
5. ***Validate the findings*** by discussing the key learning with stakeholders as part of communication discussed below. Any discrepancies should be checked with original sources.

5.2 Communication

The most important aspect of the entire monitoring process is to communicate the results related to the purposes back to the audience, which involves discussing the findings with the audience, seeking feedback and validation, and seeking appropriate decisions and actions to make use of the results. This communication process is critical to adaptive coastal management, which involves using the information to improve the way management is done in the future. For example, if the purpose of the

socioeconomic monitoring is to understand the value and importance of coral reefs, then the results regarding people's perceptions of non-market and non-use values can be used to understand value and importance. If the results show that there are positive and increasing perceptions of the value of protecting coral reefs, then this demonstrates a high value of coral reefs. This information can then be used by the manager to demonstrate to the public and policy-makers the importance of putting resources into protecting the coral reefs.

As discussed in ***Section 3.9: Who is the audience for the results?***, the audience may range from stakeholders to community members to policy-makers and coastal resource managers. From an ethical stand-point, it is highly recommended that the results of the socioeconomic monitoring be reported back to the community even if they are not the target audience. This is done as a courtesy to the community members who provided their time for the interviews. This will also help ensure good relations for future work with and in the community. Interviewee fatigue is a serious concern in any socioeconomic monitoring effort and the more people are involved in the process and have access to the results the greater will be people's willingness to participate in subsequent monitoring activities. It is, therefore, important to discuss with community members, how the results will be used and how this will affect management.

When determining which results to highlight and share with the audiences, the team needs to consider what they expect each audience to do with the results presented to them, including actions they expect them to take. They also need to consider the critical pieces of information that each target audience will be looking for from the results.

The results of the socioeconomic monitoring can be communicated to the various audiences through both one-way and two-way communication mechanisms. One-way communication mechanisms include:

- Written material (report, papers)
- Visual material (posters, pictures)
- Oral presentations
- Mass media (newspapers, magazines, radio, television)
- Internet

Two-way communication mechanisms include:

- Group discussion
- One-on-one discussion
- Physical and electronic bulletin boards
- Remote communications (telephone, video phone, web camera)
- Internet

Two-way communication mechanisms have the benefit that they bring the audience into the monitoring process by allowing them to provide feedback on the findings. If they have a mechanism for being involved, then they are more likely to support and take action related to the results.

When deciding which mechanisms to use, the team should consider the following questions:

- What is their preferred method of receiving information? This may be closely related to their educational level and technological capacity. The literacy rate is important to consider as well as whether they prefer to read information, listen to a radio or watch television. Are they computer literate? Do they use the internet

regularly? Do they gather together periodically at meetings or conferences? If so, when?

- Do they prefer technical or academic prose over that of a more causal, conversational style? Where and how are spoken communications typically done? What language is used?

If the results are going to be communicated in a written form, a report is presented for the target audience. The report can take several forms depending upon the audience for the report. Some end-users, such as senior policy or decision-makers, may have little interest in a general description of the area and communities studied, but may be interested in issues, problems and potential solutions. Other end-users, such as researchers, development agencies planning to work in the area, and coastal resource managers, may want detailed descriptions of all socioeconomic conditions and factors relating to coastal resource stakeholders.

Typically, the report will include:

1. ***Executive Summary*** – a summary discussion of issues, problems, opportunities and solutions identified in the monitoring.
2. ***Introduction*** – a discussion of the major and specific purposes of the socioeconomic monitoring (related to the different uses of socioeconomic information presented above) and providing some background on the biological, physical, social, economic and political characteristics of the area.
3. ***Methods*** – a discussion on the sampling methods, the data collection methods, and the qualitative and quantitative data analysis methods used.
4. ***Results*** – a presentation of the main results from the monitoring effort including tables, diagrams, correlations between indicators, and a narrative discussion. The specific results that may be presented for each variable are noted in the analysis sections for each variable and the Analysis Sheets in the Appendix.
5. ***Discussion*** – a discussion on key learnings and implications from the results organized organized around the originally identified purposes of the monitoring.
6. ***Recommendations*** – recommended management actions and potential solutions to be undertaken as a result of the monitoring.

APPENDIX A: THE INDICATORS

Section 4: What Data Do I Collect? provided a brief listing of the SocMon indicators. This appendix describes each indicator, including:

- ***What it is*** - description of the indicator
- ***How to collect the data*** – description of how to collect the data (e.g. type of key informants, sources of secondary data) and relevant interview question, which are all compiled in ***Appendix B: Key Informant Interview/Secondary Source Guide*** and ***Appendix C: Household Interview Guide***. In some cases a section, ***Additional data collection,*** is provided suggesting additional information that may be useful to collect.
- ***How to analyze the data*** – explanation of what to do with the data, including comparisons to make with other data and what tables or narrative text to prepare, which are compiled ***Appendix D: Key Informant Interview/Secondary Source Analysis Sheet*** and ***Appendix E: Household Interview Analysis Sheet.*** In most indicators a section, ***Additional analysis,*** is provided noting analysis that can be done beyond what is included in the ***Appendices D & E*** analysis sheets.
- ***How the information can be useful to managers*** – discussion of how the information can be useful relating back to the purposes noted in the previous section, ***Section 2: Why Should I Do This?***

The indicators are presented in two sections according to their means of data collection: secondary sources/key informant interviews and household interviews. In each section the indicators (e.g. age, gender, education, literacy, religion, ethnicity) are presented in groups because they have closely related meanings, means of data collection, analyses and/or uses. Refer to the table ***Section 4: What Data Do I Collect?*** for a consolidated table of all the indicators.

[BOX:***?*** The selection of the indicators to be monitored should be tailored to the information needs of the study area as discussed in ***Section 4: What Data Do I Collect***.]

SECONDARY SOURCES/KEY INFORMANT INTERVIEW INDICATORS (KS)

COMMUNITY-LEVEL DEMOGRAPHICS

KS1. Study Area

What it is

The study area refers to the location of the coastal and marine resources and the stakeholders where the study is being conducted. The boundaries of the study area are determined by the physical location of the resources and by where the stakeholders live and work. Stakeholder refers to people who make direct use of the coastal resources as well as people whose actions may affect the coastal resources. The study area will, therefore, often encompass a coastal area and the adjacent water catchment area. The stakeholders may be highly mobile and spread far wider than the area that is managed. There may be one or several communities in the defined study area that include all important stakeholders. See the ***GCRMN Manual, Chapter 1: Predatory Activities, Identify study area and study sites p.26*** for further discussion.

How to collect the data
Information on the study area is usually obtained from maps of the area and discussions with key informants, such as the village chief or town mayor. It is important to answer the question:

What are the boundaries of the study area?

The area needs to be noted on a map.

Additional data collection: It may also be useful to use symbols and colors to identify sites and coastal and marine resources of importance, particularly in the community (e.g. fish market, village center).

How to analyze the data
Synthesize the information from the key informants and maps onto a single map, which will be used throughout the monitoring and presented with the results. The boundaries of the study area, based on the coastal and marine resources and the location of the stakeholders, should be identified on the map. Sites of importance may also be noted.

How the information can be useful to managers
Clearly identifying the study area is important to identifying use patterns and potential threats to the resources. By noting the areas on a map, the managers can see what geographical features are included in the area, such as watersheds, agricultural areas, and high density residential developments.

From the perspective of the socioeconomic monitoring program, it is critical to define the community area, since this study area is the focus of monitoring over time. In order to be able to make comparisons over time, the monitoring teams must be clear on the communities within the boundaries of the study.

KS2. Stakeholders

What it is:
Stakeholders are individuals, groups, or organizations of people who are interested, involved or affected (positively and negatively) by coastal resource management. These stakeholders may or may not actually live within or adjacent to the site, but are people who have an in interest in or influence on coastal resource management. See ***GCRMN Manual, Chapter 1: Preparatory Activities, Identify the reef stakeholders*** for further discussion.

How to collect the data:
Key informants (e.g. government officials, elected officials, fishers, business leaders) in the area are interviewed to identify the three main stakeholder groups for each coastal activity (e.g. fishing, aquaculture, tourism). The coastal activities are identified as part of indicator ***KS15, Activities***.

Coastal Activity (edit list according to activities identified in ***Activities, KS15***)	Stakeholder group 1	Stakeholder group 2	Stakeholder group 3
Fishing			

Aquaculture			
Tourism			

How to analyze the data:
Synthesize the data from the key informants into the table in the ***Key Informant Interview/Secondary Source Analysis Sheet***.

Additional analysis: A short narrative may be prepared which identifies the stakeholder groups involved in each coastal activity.

How the information can be useful to managers :
Coastal resource managers have come to realize that the active participation of coastal resource stakeholders in planning and management can improve success of coastal resource management. If local people are involved in coastal resource management and feel an ownership over it, they are more likely to support coastal resource management. An understanding of stakeholders will allow the manager to better identify individuals that may be impacted by management measures and to address these impacts with these stakeholders.

Stakeholders are also identified to determine which ones should be the focus of the monitoring.

KS3 & KS4. Population & Number of Households

What it is
The population is the total number of people residing in the study area. The number of households is the number of occupied houses in the study area, regardless of the number of families residing in the houses.

How to collect the data
Data on population and household number are usually obtained from national, regional and/or local census statistics, which may be available from the Census Bureau, Town Council and/or community library. It is important to cross-check these data with key informants, such as the village chief or town mayor. The critical questions to address are:

How many people live in the study area? _____
How many households are in the study area? _____

How to analyze the data
Synthesize the data from the secondary sources and key informants to determine the population size and number of households and note on the ***Key Informant Interview/Secondary Source Analysis Sheet***.

Additional analysis: Subtract the results from previous years to calculate changes over time. Compare changes in population and households and number of households over time with changes in resource conditions and the data from ***levels & types of impacts (KS21)*** to see if population changes are correlated to conditions and impacts.

How the information can be useful to managers

Understanding the study area population levels and number of households is important to understanding threats. Population levels provide a general sense of the level of pressure on the natural resources. Higher populations generally place greater pressure on the resources. The information on changes over time can also be useful in determining if these pressures are increasing, decreasing or staying the same. Comparisons with resource conditions and levels of use help determine how much increases in population are influencing resource conditions.

From the perspective of the socioeconomic monitoring program, population and number of households are important to determining the sample of households to interview. It is, therefore, important to collect this information from the key informant interviews before starting the household interviews.

KS5. Migration Rates

What it is

Migration rate refers to the percentage change in population size as a result of people moving into or out of the study area in the past year. For example, if there were 1000 people in a village in 1999 and 500 moved into the study area by 2000, then the migration rate would be 500/1000 = 50%.

How to collect the data

Migration data are usually available from national, regional and/or local census statistics, which may be available from the Census Bureau, Town Council and/or community library. It is important to cross-check these data with key informants, such as the village chief or town mayor. The critical question to address is:

What was the net increase or decrease in people moving into and out of the study area in the last year? _____ (note + or – to reflect moving in or out)

How to analyze the data

Synthesize the data from the secondary sources and key informants to determine the migration rate and note on the ***Key Informant Interview/Secondary Source Analysis Sheet***.

Additional analysis: Subtract the results from previous years to calculate changes over time. Compare changes in migration rates over time with changes in resource conditions and the ***levels & types of impacts (KS21)*** to see if migration rates are correlated to conditions and impacts.

How the information can be useful to managers

Migration rates are also useful for understanding threats. As people move into an area, pressures on the resources increase. The comparison with resource conditions and levels of impacts is particularly useful to see if the newcomers are associated with changing conditions and impacts.

Migration rates are also important for interacting with stakeholders, particularly developing awareness programs. Immigrants can be expected to have less awareness of the coastal resources and management programs than long-term residents. A coastal management program with a high migration rate into the community may want to develop programs tailored to this growing population with a limited base understanding and appreciation of their environment. For example, they may want to have community meetings with traditional resource users and immigrants to introduce the newcomers to

existing tenure systems. Furthermore, it the manager knows what activities the immigrants are involved in, they can target those activities. For example, if there a large number of new hotel operators with little understanding of the coastal ecology coming in and clearing mangroves, then the manager may want to develop an educational video about the importance of marine resources as tourist attractions and the impacts of hotel practices on these valuable resources.

KS6, KS7, KS8, KS9, KS10, KS11 & KS12. Age, Gender, Education, Literacy, Ethnicity, Religion & Language

What it is

Age, gender, education, literacy, ethnicity and religion are basic demographic indicators. Education is measured by the average number of years of formal schooling completed by study area members over 16 years old. Literacy is measured by the percentage of study area members able to read and write. Age is measured by the percent of study area members in different age categories. Gender is measured by the percent of the population that is male and female. Ethnicity and religion are measured by the percent of study area members that have the various ethnic and religious affiliations, respectively.

How to collect the data

Basic demographic information on the study area is typically available from secondary sources, such as government census departments, town offices and community centers. It is important to cross-check these data with key informants, such as the village chief or town mayor.

The data collection should focus around determining the percent of the people in the study area that are in various categories of age, gender, education, religious affiliation and ethnic affiliation. The key questions to address are:

What percent of the people in the study area are currently age: ____0-18; _____19-30; _____31-50; _____ over 50 ?

What percentage of the population is male? _____ female? ___

What is the average number of years of education of people over 16 years old in the study area? _____

What percentage of the population is literate (can read and write)? _____

What is the ethnic make-up of the study area (percent of each major ethnic group in the study area): (write-in)_____; (write-in) ____; (write-in) _____

What is the religious make-up of the study area (percent of each major religious group in the study area): (write-in) _____; (write-in) ____; (write-in) _____

What are the major languages spoken in the study area (percent of each major language in the study area): (write-in) _____; (write-in) ____; (write-in) _____

How to analyze the data

Synthesize the data from the secondary sources and key informants to determine the percentage of people in each of the categories and note in the ***Key Informant Interview/Secondary Source Analysis Sheet***.

Additional analysis: Three pie charts may be prepared to visually illustrate the age, religious and ethnic distribution in the study area. Subtract the results from previous years to calculate changes over time. A short narrative may be prepared describing the demographic make-up of the study area and how it has changed over time.

Similar data are collected as part of the household interviews. Comparison between results allows for a check on the accuracy of the data. If there are differences between results, then it may be useful to consult with the key informants to identify the cause of the discrepancy. Otherwise a full census survey (interviews of all households, not just a sample) should be conducted to accurately understand the study area demographics.

How the information can be useful to managers

All of these indicators are important to developing stakeholder participation in management. Education, literacy and age can be predictors of receptivity to new ideas. Generally, as age increases, openness to new ideas (e.g. establishment of a no-take are) decreases. And as education levels increase, open mindedness increases. For example, older fishermen may not be as willing to change occupations, but a young fisherman may be willing to go through extensive training for a new career. By understanding these indicators, managers gain a sense of likelihood of awareness, support and compliance with management measures.

Ethnicity and religion are also important to gaining stakeholder participation. Both of these indicators are important aspects of social structure and frequently related to group membership, loyalty and other aspects of social behavior. Homogeneity often leads to a greater willingness to work together. By understanding ethnic and religious affiliation, managers can better understand how the stakeholders behave and therefore how to interact with them. A relatively homogenous community will likely be more capable of working together than an area with divergent ethnic and religious interests.

This information can also be useful in determining entry points to groups. For example, if religious affiliation is strong, then the religious services or meetings may be a means of reaching people and religious leaders may be appropriate representatives of the community members . Ethnicity and religion can also provide insight into people's perceptions and values of the resources; although this requires an understanding of their religious and ethnic beliefs.

Depending on the culture, gender can also be a strong indicator of participation since in some cultures women are not actively engaged in politics and management. It may be more difficult in these cases to actively involve them in management.

Education, literacy, religious and ethnic affiliations are important to understanding impacts of management on livelihood and well-being over time. Increases in education levels associated with a particular management strategy, indicate a positive impact. Severe reductions in the population percent of particular ethnic groups may indicate a management strategy is having an inequitable impact on that group. The difficulty in these interpretations is making the correlation to management strategies amidst all the other policies and programs that may be causing these changes.

Age is useful for predicting future pressures on the resources. A very young population, which is common in many Asian nations, indicates there will be more pressure on the resource in the coming years.

Also, from the perspective of the socioeconomic monitoring program, the information on distribution of age, gender, education, ethnicity, religion and occupational structure will be useful for ensuring the breadth of people in the study area are interviewed. For example, if there are 30% Hindus, 40% Muslims and 40% Christians, then the team needs to ensure interviews are conducted with approximately the same percent from each groups. It is important to collect this information from the key informant interviews before starting the household interviews. See ***Section 3. 6: Who should be interviewed?*** for a discussion of selecting respondents.

KS13. Occupation

What it is:
Occupation refers to an activity that provides livelihood, such as income, food or other means of sustenance. The primary occupation is the main source of livelihood; whereas the secondary occupation is the second most important source of livelihood.

How to collect the data:
Data on occupation may be available through secondary sources, such as census statistics, fisheries records and community development plans. However, it may not be presented to the level of occupation of use to the manager. For example, "tourism" may be noted as an occupation; yet, the manager may want to know the percent of watersports operators and hotel workers separately. It is therefore, important, to interview key informants, such as the village chief, town mayor and other community leaders and representatives of various sectors (e.g. fisheries associations, hotel associations). The following table needs to be completed through the data collection:

Major occupations in community	Percent of working population conducting this occupation as primary occupation	Number of people conducting this occupation as primary occupation	Percent of working population conducting this occupation as secondary occupation
1.			
2.			
3.			
4.			
5.			

Additional data collection: The team may also want to ask about tertiary occupations, which can be useful for determining the percent of the community involved in the activity, but not dependent on it for their primary or secondary source of livelihood.

How to analyze the data:
Synthesize the data from the secondary sources and key informants to determine the percentage of the working population in each of the categories and the number of people primarily engaged in each occupation as their primary occupation. Note this information on the ***Key Informant Interview/Secondary Source Analysis Sheet***.

Additional analysis: Subtract the results from previous years to calculate changes over time. Compare these results with changes in resource conditions, ***types of uses (KS17), levels & types of impacts (KS21)*** and ***perceived threats (H17)*** to see if there is a correlation. A short narrative may be prepared describing the major occupations, how important they are given the percent and number of people engaged in each of them, and how this has changed over time.

Similar data are collected as part of the household interviews. Comparison between results allows for a check on the accuracy of the data. If there is a large difference between results, then a full census survey should be conducted. Note that the household interview data are based on the entire population (not just the ***working population)***, which includes those unemployed. To accurately compare, the household percentages will need to be recalculated based only on the people listed as working (i.e. not the people who noted "student", "unemployed", etc as their occupation).

How the information can be useful to managers

Occupational structure is one of the most useful sources of information regarding threats. It provides an understanding of the number of people engaged in coastal activities, many of which are potential threats to the resources. The changes over time and comparisons with ***levels of impacts*** and resource conditions can be particularly insightful regarding threats. For example, if more and more people are seen to be shifting into fishing as their primary occupation over time, then over-fishing may be a growing concern. Comparisons with resource conditions should indicate a decline in number of fish as the number of people fishing increases. Comparisons with ***types of uses*** and ***levels & types of impacts*** can also be useful in seeing how those activities are likely to be increasing. Comparison with ***perceived threats*** is useful for seeing how the community perceives these increases – whether they are seen as impacting the resources. If the number of fishermen is increasing, but resource conditions are good, the types of uses are relatively benign, and the community does not consider fishing a medium or high level of impact, then fishing may not be a threat.

Occupational structure is also useful for determining the importance of marine resources. The greater the percentage of people using the resources, the greater the dependency, and therefore the more important the resources. Increases in number and/or percent of people working in coastal-related activities over time indicate the importance is also increasing. The distribution of people in various occupations also indicates the level of community economic stability, which is also important for understanding the importance of the resources. If the majority of people depend on fishing, then the community will be severely impacted by a collapse in the fishing industry.

Finally, occupational structure is also important for determining the effects of management strategies on community livelihoods. For example, managers can see whether or not occupations shift after alternative livelihood training is conducted. Or they can see if the establishment of a no-fishing areas coincides with a shift out of fishing and into other occupations.

COMMUNITY INFRASTRUCTURE

KS14. Community infrastructure

What it is

Community infrastructure is a general measure of local community development and wealth of the study area. It is a description of the level of community services (e.g. hospital, school) and infrastructure (e.g. roads, utilities), which can include information essential to determining sources of anthropogenic impacts on coastal resources (e.g. sewage treatment).

How to collect the data

This information is collected by interviewing key informants, such as the village chief, the mayor, or town engineer, reviewing secondary data from town records, particularly the community development office, and walking through the community, observing and inventorying community infrastructure.

It is important to determine whether the following items exist in the study area:

schools, resident doctors, resident nurses, hospitals, medical clinics, electricity, telephone, internet access, radios, televisions, newspapers, sewage treatment plant, ice plant, hard top road access, water supply to homes, banking services, guesthouses/hotels/inns, restaurants

In some cases this list may need to be modified to more accurately reflect indicators of community development within the study area. It is important to include the range of infrastructure in the region. For example, if televisions are already prevalent in the region, but satellite receivers are only beginning to appear, then it may be more appropriate to include satellite receivers in the list. Accurate scale construction is needed to make meaningful comparisons between communities and over time, such as pre- and post-MPA establishment.

How to analyze the data

Compile the information from observations, key informant interviews and secondary sources into a list of infrastructure that exists in the study area and note on the ***Key Informant Interview/Secondary Source Analysis Sheet***.

Additional analysis: Compare these lists over time. A short narrative based on this list may be prepared describing the infrastructure in the study area and how it has changed over time.

How the information can be used by managers

Community infrastructure is useful for determining the wealth in the study area, as measured through the level of community development, and overall impacts of management on communities in the study area. By monitoring the existence of the listed items, the manager can see if study area wealth and well being is increasing, decreasing or staying the same. The difficulty is tying these changes to coastal management initiatives. In some cases these are closely linked. For example, if a management program has provided water access or sewage treatment to a community. In other areas coastal managers have no responsibility for infrastructure in the community.

The information on the availability of banking services, ice for fishermen and hard top roads can be useful for identifying the ability of fishermen to build their businesses. At the same time, information on sewage treatment provides insight as to whether raw sewage may be affecting coastal water quality. Information on guesthouses/hotels/inns and restaurants is useful for determining the general level of tourism in the area.

Finally, the information on the existence of telephones, internet access, radios, televisions, and newspapers is useful to developing education and outreach programs in the community. Awareness campaigns can be tailored to the most prevalent medium.

COASTAL AND MARINE ACTIVITIES

KS15. Activities

What it is:
Coastal and marine activities is the identification of the uses of coastal and marine resources in the study area. These may include activities directly or indirectly using or affecting the coastal and marine resources. These may include, for example: fishing, tourism, aquaculture, marine transportation, agriculture, coral mining, sand mining, dredging, oil-gas development, military bases, mangrove clearing, forest clearing, industry, conservation.

How to collect the data:
Data on coastal and marine activities is obtained by interviewing local key informants, such as the mayor, businessmen, fishers, and tour guides to identify the coastal and marine activities in the area. Observation is also used to identify the use activities in the area. A list is compiled of coastal and marine activities.

Since some coastal and marine activities may be seasonal, take place at odd hours, or take place out of sight of land, it is important to use a multi-method approach including observation at various times and to interview a range of key informants to ensure that the range of coastal and marine activities are identified.

Additional data collection: The coastal and marine activities can be identified on the study area map. For example, hotel areas can be identified in one color and diving areas in another color. The data can be placed on the map in a general or in a very specific manner.

How analyze:
Synthesize the data from the various key informants and observation into the table in the ***Key Informant Interview/Secondary Source Analysis Sheet***.

Coastal and Marine Activities	Coastal and Marine Goods and services	Types of Use (primary)	Value	Market Orientation (primary)	Use patterns	Level of Impact	Types of Impacts (primary)	Level of use by outsiders	House-hold Use (primary)
Fisheries									
Tourism									
Aqua-culture									

Additional analysis: A short narrative may be prepared describing the major coastal and marine activities in the study area.

How information can be useful to managers :
The identification of coastal and marine activities is important for the manager to have an understanding of the various uses of coastal and marine resources in the area and the potential for conflict. For example, a major port in the area where there are large movements of ship and potential discharges of waste may potentially conflict with the tourism sector.

KS16. Goods and Services

What it is
Coastal and marine goods and services are the specific products produced from the identified coastal and marine activities. These include extractive goods such as lobster, mangrove wood, coral products, and sand; and non-extractive services such as diving, snorkeling, glass bottom tours, mangrove tours and recreational fishing.

How to collect the data
Data on coastal and marine goods and services is obtained by interviewing key informants from the relevant activities (e.g. long-time fishers, president of the hotel association, long-time dive boat operators, tour leaders) as well as other key informants knowledgeable about the activities (e.g. government officials). It is also important to observe coastal activities and their physical evidence for further information and as a check on the information obtained from the interviews.

For each coastal and marine activity, the key informant is asked to identify the coastal and marine goods and services produced. For example, for tourism these might include hotels and diving. A list of goods and services is compiled for each activity

Since some coastal and marine goods and services may be seasonal, take place at odd hours, or take place out of sight of land, it is important to use a multi-method approach including observation at various times and to interview a range of key informants to ensure that the range of coastal and marine goods and services are identified.

How to analyze the data:
Synthesize the data from the various key informants and observations into one table in the ***Key Informant Interview/Secondary Source Analysis Sheet***.

Coastal and Marine Activities	Coastal and Marine Goods and services	Types of Use (primary)	Value	Market Orientation (primary)	Use patterns	Level of Impact	Types of Impacts (primary)	Level of use by outsiders	House-hold Use (primary)
Fisheries	*Lobster*								
	Grouper								
Tourism	*Hotel*								
	Diving								

Aqua-culture	*Oyster*								

Additional analysis: A short narrative based on the above table may be prepared describing the coastal and marine goods and services produced in the study area.

How the information can be useful to managers :
Information on coastal and marine goods and services is useful for determining the overall impacts of management on communities in the study area, particularly marketing and production. As a result of management measures, there may be a shifting in the coastal and marine goods and services produced in the area, with positive and negative impacts on resource users. For example, if a marine protected area actively promotes tourism in the area, then it would be expected that the value of diving would increase and the market orientation would expand.

KS17. Types of Use

What it is
Types of use identifies the specific method or development being employed (e.g. traps, nets, guest houses, SCUBA diving) for each coastal and marine good and service.

How to collect the data
Data on types of uses is obtained by interviewing key informants who are representatives of the various stakeholder groups (e.g. president of the fishermen's association, manager of the oldest sand mining operation). In addition, it is important to cross-check this information by observation – walking around the community, particularly where the various activities take place.

The key question to address is what types of uses are occurring for each good and service. For example, for fish goods (e.g. grouper, lobster), the responses may include traps, nets, line, spearfishing or gleaning. For hotel services under tourism activities, the responses may range from guests houses (1-7 rooms) to inns (5-50 rooms) to hotels/resorts (>50 rooms). For aquaculture, the responses may include pond, line or cage. For marine transportation, responses may include port development, shipping, and recreational boating. These are only examples. The team will need to develop categories of potential responses according to their area. For example, if there are only large hotels, then the team may decided to categorize responses for hotels according to whether or not they are all-inclusive.

Additional data collection: For each of these types of uses, the team may want to ask the level of use on a scale of one to ten, where one is limited use and ten is maximum use. These rankings could then be compared over time to see if levels have increased, decreased of stayed the same.

For the fisheries data, the team may want to add another column to further identify the type of fisheries based on the following categories:
Large-scale – powered, high-investment, machine-made equipment, electronics, division of hired labor, products found worldwide, operating in distant waters.

Industrial – powered, high-investment, machine-made equipment, electronics, division of hired labor, products found worldwide, operating in national exclusive economic zone.

Small-scale – small boat, small engine, partly or wholly machine made equipment which is operator assembled, full- or part-time labor, mechanized and manual gear, national and local markets, operating in nearshore coastal waters.

Artisanal - small boat, small engine, partly or wholly machine made equipment which is operator assembled, full- or part-time labor, mechanized and manual gear, local markets, operating in nearshore coastal waters.

Subsistence – lone operators, family or community group, part-time labor, small boat, un-powered, non-mechanized, operator assembled fishing gear, primarily for home consumption, operating in coastal waters.

How to analyze the data

Synthesize the data from the key informant interviews and observations to compile a list of types of use taking place in the study area.

Coastal and Marine Activities	Coastal and Marine Goods and services	Types of Use (primary)	Value	Market Orientation (primary)	Use patterns	Level of Impact	Types of Impacts (primary)	Level of use by outsiders	House-hold Use (primary)
Fisheries	*Lobster*	*Trap*							
	Grouper	*Handline*							
Tourism	*Hotel*	*Guesthouses (1-7 rooms)*							
	Diving	*SCUBA*							
Aqua-culture	*Oyster*	*Line*							

Additional analysis: Compare the results over time to determine shifts in types of uses. Compare changes in types of uses with changes in resource conditions and the ***levels & types of impacts (KS21)*** to see if the types of uses are correlated to conditions and impacts.

How information can be used by managers

Information on the types of uses is particularly useful for identifying threats to the coastal and marine resources, such as bomb fishing or mangrove clearing. By monitoring this information over time, the manager can also see what impact management has had on these types of uses. For example, if the coastal management program initiated a mangrove replanting campaign, yet mangrove clearing continues to be listed as a type of

use, then this indicates that the campaign is not preventing continued mangrove clearing. This information also helps to determine the effectiveness of coastal management programs.

Understanding what types of uses are taking place in the study area is also critical to developing stakeholder participation and awareness programs in coastal management. The managers need to know how people are tied to the resources in order to work with them and communicate with them regarding threats to the resources.

KS18. Value of Goods and Services

What it is
The value of coastal and marine goods and services is the monetary value for each product in the market.

How to collect the data
Data on the value of coastal and marine goods and services is obtained by interviewing local key informants such as fishers, buyers, hotel operators, and dive operators. They are asked to put a value (high, medium and low) on the product of each coastal and marine good and service. For example, a value of high may be placed on lobster if it has high demand and high monetary value in both the local and international markets. A value of medium may be placed on hotel development if it is composed of only a few guest houses. A value of low may be placed on a cleared mangrove area which does not support much bird life and therefore has low potential for ecotourism. The value of goods and services (high, medium, low) will need to be specifically defined by the team for each study area.

How to analyze the data
Synthesize the data from the various key informants into the table in the ***Key Informant Interview/Secondary Source Analysis Sheet***.

Coastal and Marine Activities	Coastal and Marine Goods and services	Types of Use (primary)	Value	Market Orientation (primary)	Use patterns	Level of Impact	Types of Impacts (primary)	Level of use by outsiders	House-hold Use (primary)
Fisheries	*Lobster*	*Trap*	*High*						
	Grouper	*Handline*	*High*						
Tourism	*Hotel*	*Guesthouses (1-7 rooms)*	*Medium*						
	Diving	*SCUBA*	*Low*						

Aqua-culture	Oyster	Line	Medium						

Additional analysis: A short narrative may be prepared describing the value of the coastal and marine goods and services.

How information can be useful to managers
The value of coastal and marine goods and services is useful for determining the overall impacts of management on communities in the study area, including livelihood, marketing, production and food security. For example, if the management authority begins promoting products from an aquaculture cooperative the authority initiated, then it would be expected that the value of these products would increase as demand increased.

The value of coastal and marine goods and services is also useful in demonstrating the importance of managing the area for sustainable use. For example, if SCUBA diving brings in a large number of international visitors with a high value due to demand for rooms, restaurants, and dive operators, the coastal manager has justification for putting management efforts into ensuring the sustainability of coral reefs and fisheries in the study area. In contrast, if the coral reefs have been bombed and have a low value for diving, the manager may have a more difficult time justifying the importance of the reefs for diving.

The value of coastal and marine goods and services is also useful in determining which resources are under greatest harvesting pressure and may, therefore, need particular attention by managers. The value is a measure of the product's relative importance. Since prices influence human behavior, harvesting pressure is likely to be strongest on the most valuable products. A higher value fish, for example, will demand greater attention and fishing effort than a lower value fish and therefore may require particular attention from the coastal manager.

The value of coastal and marine goods and services is also useful in understanding the level of household income and the well-being of the household. If, for example, product values shift from 'high' to 'low', then a decline in income and well-being would be expected.

KS19. Goods and services market orientation

What it is:
Coastal and marine goods and services market orientation is the identification of the market in which each product is primarily sold.

How to collect the data:
Data on coastal and marine goods and services market orientation is obtained by interviewing local key informants such as fishers, buyers, hotel operators, and dive operators. These key informants can be used to obtain information on the primary market for each coastal and marine good and service.

The key informants are asked to identify the primary market in which each good or service is sold (international, national, regional, or local).

Additional data collection: Alternatively, the key informant is asked to list all markets for each good or service and to rank them in order of importance of each market. This is useful for understanding the full range of markets.

How analyze:
Synthesize the data from the various key informants into the table in the ***Key Informant Interview/Secondary Source Analysis Sheet***.

Coastal and Marine Activities	Coastal and Marine Goods and services	Types of Use (primary)	Value	Market Orientation (primary)	Use patterns	Level of Impact	Types of Impacts (primary)	Level of use by outsiders	House-hold Use (primary)
Fisheries	*Lobster*	*Trap*	*High*	*International*					
	Grouper	*Handline*	*High*	*Regional*					
Tourism	*Hotel*	*Guesthouses (1-7 rooms)*	*Medium*	*International*					
	Diving	*SCUBA*	*Low*	*International*					
Aqua-culture	*Oyster*	*Line*	*Medium*	*Local*					

Additional analysis: A short narrative based on the above table may be prepared describing the market for each of the goods or services. A flowchart may be prepared showing the flow of each good or service from source to market.

How the information can be useful to managers :
Coastal and marine goods and services market orientation is useful for determining the overall impacts of management on communities in the study area, particularly livelihood, marketing, production and food security. For example, since the livelihood and income of people in the study area is linked to markets, the fish market orientation is important to determine where goods and services produced in the area are sold. This indicator allows for an analysis of changes over time in the market channels for major coastal and marine goods and services . It shows the relationship of local producers and traders with various markets, such as linkages with international markets, which may affect harvesting practices.

Market orientation can also be useful as an indication of how much pressure may be put on the resource. For example, fishers may put high fishing effort on a high valued fish for international markets. It can also give an indication, over time, of shifts in markets for

marine and coastal goods and services . The impact of management measures can be assessed through changes in markets. For example, management measures may result in higher value fish being available in the area, which may be marketed in regional or national markets.

KS20. Use patterns

What it is
Use patterns refers to the location of coastal-related activities.

How to collect the data
Data on use patterns are collected first from secondary sources, including village and town offices, which may have maps noting the location of various activities in the area (e.g. a zoning map that notes farming areas, a fisheries study that documents fishing areas). Next, key informant interviews are conducted with representatives of the various activities (e.g. president of the hotel association). Finally observations are used to identify and verify use patterns.

Information is collected on the location of each activity according to the good or service and noted in the last column of the table.

Additional data collection: The team can record the locations of the various activities on the base map, which will provide much more information on location than simply noting "bays" or "reefs".

How to analyze the data:
Synthesize the data from the secondary sources and key informants to determine the locations of the activities, which needs to be recorded on the table in the ***Key Informant Interview/Secondary Source Analysis Sheet***.

Coastal and Marine Activities	Coastal and Marine Goods and services	Types of Use (primary)	Value	Market Orientation (primary)	Use patterns	Level of Impact	Types of Impacts (primary)	Level of use by outsiders	House-hold Use (primary)
Fisheries	*Lobster*	*Trap*	*High*	*International*	*bays*				
	Grouper	*Handline*	*High*	*Regional*	*reefs*				
Tourism	*Hotel*	*Guesthouses (1-7 rooms)*	*Medium*	*International*	*coast*				
	Diving	*SCUBA*	*Low*	*International*	*reefs*				
Aqua-cultu	*Oyster*	*Line*	*Medium*	*Local*	*bay*				

r e									

Additional data analysis: The data can also be presented on the base map, which also notes the study area. By comparing the locations of the various activities, the team can identify areas of overlap and therefore potential conflict. Compare the locations over time to see how use patterns are shifting. A brief narrative may be prepared describing the activities, their location and how they have changed over time.

How information can be used by managers

Similar to ***types of uses*** (***KS17***), information on use patterns is useful for identifying threats to the coastal and marine resources. By understanding the locations of activities, the manager can better determine the impact. For example, if hotel development is occurring near a coral reef, there is potential for impacts from sediment run-off and sewage release. The size of the area also is an indicator of the level of impact. This is particularly useful since the information from ***types of uses*** provides an understanding of what activities are taking place but not how much.

By monitoring this information over time, the manager can also see what impact management has had on these activities. For example, if the coastal management program initiated a mangrove replanting campaign and mangrove clearing continues to be listed as an activity, the manager can look at the size of the area being cleared and see if it has increased, decreased or stayed the same from previous years. If it has declined, then the program may have had some positive effect. This information also helps to determine the effectiveness of coastal management programs.

Finally, by mapping the use patterns, managers can better understand problems, particularly conflicts over access to resources and overlapping uses among stakeholder groups. This can help determine if measures, such as zoning of activities, are appropriate for an area.

KS21. Levels & types of impacts

What it is

Levels and types of impacts is a measure of perceptions of the general level and type of impact of coastal and marine activities on coastal and marine resources. This is not a scientific assessment of levels and types of impacts, but rather a documentation of what people think.

How to collect the data

These data are collected by interviewing key informants, such as village officials, long-standing members in the community, and others who represent the general views of the community.

The key informants are asked to identify using a scale of high/medium/low/none the level of impact of each coastal and marine activity according to its goods and services. While they will need to be adapted for each study area, high could mean severe and irreversible impacts on the resources, such as cutting and filling mangrove areas; medium could mean moderate impacts on the resources, such as cutting mangrove areas; low could mean minor impacts on the resources, such as a small percentage of mangrove area being disturbed, and none could mean no impact. The primary types of impacts are then briefly noted. For example, if hotel development is causing pollution, then “pollution” would be noted. The last two columns of the table is completed based on this information.

Additional data collection: The types of impacts can be described in greater detail to identify direct and indirect impacts, such as sewage outflow is a direct impact on water quality and up-stream agriculture causes sedimentation during the rainy season.

How analyze
The data are synthesized to determine the general level of impacts and types of impacts and entered into the table in the ***Key Informant Interview/Secondary Source Analysis Sheet***.

Coastal and Marine Activities	Coastal and Marine Goods and services	Types of Use (primary)	Value	Market Orientation (primary)	Use patterns	Level of Impact	Types of Impacts (primary)	Level of use by outsiders	House-hold Use (primary)
Fisheries	*Lobster*	*Trap*	*High*	*International*	*bays*	*L*	*Overfishing*		
	Grouper	*Handline*	*High*	*Regional*	*reefs*	*M*	*Overfishing*		
Tourism	*Hotel*	*Guesthouses (1-7 rooms)*	*Medium*	*International*	*coast*	*M*	*Pollution*		
	Diving	*SCUBA*	*Low*	*International*	*reefs*	*L*	*Anchor damage*		
Aqua-culture	*Oyster*	*Line*	*Medium*	*Local*	*bay*	*L*	*Nutrient loading*		

Additional analysis: The results are compared with results from previous years to identify shifts in types and levels of impacts. The changes are compared with resource conditions to determine if there is a correlation.

Similar data are collected as part of the household interviews where people are asked what they think are the top five major threats to coastal resources. Comparison between results allows for a check on the accuracy of the data. The activities identified by the individuals should be noted as “high” in the table completed by the key informants. If there is a large difference between results, then the key informants should be consulted to clarify. A full census survey may be necessary to accurately determine perceptions.

How information can be used by managers
Similar to ***types of uses (KS17)*** and ***use patterns(KS20)***, information on levels & types of impacts is useful for identifying threats to the coastal resources. Community members, particularly people who directly use the resources, are often the most knowledgeable about what is affecting the resources they use on a regular basis. This information can be critical for identifying activities in need of scientific study. For example, community members may note oil and gas development as high impact because they have seen a few substantial spills. This impact may be missed by scientific studies only conducted once a year.

By monitoring this information over time, the manager can also see what impact management has had on these activities and, therefore, how effective management has been. For example, if the coastal management program initiated a program to reduce the use of pesticides and other chemicals in upland agricultural areas, yet this continues to be identified as a type of impact, then this suggests that the program may not have been effective.

Finally, this information is critical for developing awareness programs and seeking stakeholder participation. If community members do not consider there to be impacts on the coastal resources, then it will be difficult to engage them in coastal management. If community members consider only one or two activities to be impacting the resources, yet scientific research shows there are several other impacts, then an awareness program may need to be initiated to increase understanding of the full breadth of activities impacting the resources.

KS22. Level of use by outsiders

What it is
Level of use by outsiders refers to the amount of outsiders using the coastal resources relative to the amount of local users from the study area. For example, if there are 1000 foreign fishermen and only 10 local fishermen, then the level of use by outsiders is high. Outsiders are people who do not live in the study area. They may be from a neighboring village or another country.

How to collect the data
This information is obtained by conducting interviews with key informants, such as village chiefs and town officials, as well as representatives from the various stakeholder groups.

The key informants are asked what is the current level of use by outsiders for each coastal and marine activity using a scale of high, medium, and low. The scale will need to be defined for each study area, but high could mean a great deal of use by outsiders, such as the majority of fishing in the study area is conducted by outsiders; medium could mean moderate use by outsiders, such as a few international tourists, and low could mean minor use by outsiders, such as one guest house out of twenty in the study area is owned by a foreigner.

Additional data collection: The key informants may be asked to identify where the outsiders originate from.

How to analyze the data

Synthesize the data from the key informants to determine the level of use by outsiders for each activity and enter into the table in the ***Key Informant Interview/Secondary Source Analysis Sheet***.

Coastal and Marine Activities	Coastal and Marine Goods and services	Types of Use (primary)	Value	Market Orientation (primary)	Use patterns	Level of Impact	Types of Impacts (primary)	Level of use by outsiders	House-hold Use (primary)
Fisheries	*Lobster*	*Trap*	*High*	*International*	*bays*	*L*	*Overfishing*	*L*	
	Grouper	*Handline*	*High*	*Regional*	*reefs*	*M*	*Overfishing*	*L*	
Tourism	*Hotel*	*Guesthouses (1-7 rooms)*	*Medium*	*International*	*coast*	*M*	*Pollution*	*H*	
	Diving	*SCUBA*	*Low*	*International*	*reefs*	*L*	*Anchor damage*	*H*	
Aqua-culture	*Oyster*	*Line*	*Medium*	*Local*	*bay*	*L*	*Nutrient loading*	*M*	

Additional data analysis: Compare these levels over time. A short narrative may be prepared summarizing the extent of use by outsiders and how that has changed over time.

How information can be used by managers:
Information on levels of use by outsiders is useful for developing stakeholder participation and awareness programs. Non-residents are often overlooked because they are not immediately visible. By understanding the relative numbers of people coming from other areas, managers can determine how important it is to build relationships with people from outside the community. If the manager knows where the outsiders are coming from, he/she can target those areas. In cases where there are users coming from overseas (e.g. foreign fishing vessels), they may decide to work through customs and immigration offices. In other cases it may be a matter of expanding education and outreach programs to neighboring communities.

Outside use is also important to understand coastal management problems. For example, increasing numbers of foreigners can often be a source of conflict in a community.

This information can also be useful for determining the value and importance of the resources. If people outside the study area are using the resources, then this shows that the resources are important to a larger area than just the immediate community . This can be important for informing politicians and the public about the need for additional resources for coastal management.

KS 23. Household Use

What it is:
Household use of coastal and marine goods and services is a measure of how households in the study area utilize coastal and marine goods and services for consumption, leisure and sale.

How to collect the data:
Data on household use of coastal and marine goods and services is obtained by interviewing key informants, such as community officials and businessmen. The key informants are asked to identify and rank the general household use of each good or service. They are asked if they use the resource for their own consumption, leisure or sale. "Own consumption" means use in the household, such as fish for food; "leisure" means for recreation, and "sale" means selling to obtain money or to barter for other goods. The information is recorded in the last column of the table.

How analyze:
Synthesize the data from the various key informants into the table in the ***Key Informant Interview/Secondary Source Analysis Sheet.***

Coastal and Marine Activities	Coastal and Marine Goods and services	Types of Use (primary)	Value	Market Orientation (primary)	Use patterns	Level of Impact	Types of Impacts (primary)	Level of use by outsiders	House-hold Use (primary)
Fisheries	*Lobster*	*Trap*	*High*	*International*	*bays*	*L*	*Overfishing*	*L*	*Sale*
	Grouper	*Handline*	*High*	*Regional*	*reefs*	*M*	*Overfishing*	*L*	*Own*
Tourism	*Hotel*	*Guesthouses (1-7 rooms)*	*Medium*	*International*	*coast*	*M*	*Pollution*	*H*	*Sale*
	Diving	*SCUBA*	*Low*	*International*	*reefs*	*L*	*Anchor*	*H*	*Sale*

							damage		
Aqua-culture	Oyster	Line	Medium	Local	bay	L	Nutrient loading	M	Sale

Additional analysis: . Similar data are collected as part of the household interviews. Comparison between results allows for a check on the accuracy of the data. If there are differences between results, then it may be useful to consult with the key informants to identify the cause of the discrepancy. Otherwise a full census survey (interviews of all households, not just a sample) should be conducted to accurately understand the study area demographics.

How the information can be useful to managers

Information on how households use coastal and marine goods and services provides insight into household dependence on resources for food and income. It is, therefore, important for understanding issues of food security in the household. This information can be useful for understanding how management measures may impact upon the livelihood of resource users and the food security of households. For example, if households primarily consume their catch, then a restriction on fishing can be expected to affect food availability and, therefore, impact food security of the household.

GOVERNANCE

KS24. Management Body

What it is

A management body is an institution that governs how coastal resource management is undertaken and ensures that there is a transparent process for planning, establishing, and enforcing rules and regulations. Management bodies may be government, non-government, or community organizations and may operate at the international, national, state/provincial or local level. There may be multiple management bodies in the study area for different coastal activities such as coastal zone management, fisheries, aquaculture, mangroves, tourism, marine transportation, and residential development.

How to collect the data

Information on management bodies may be obtained by reading the management plans for the various activities. This information may also be obtained by interviewing key informants who are knowledgeable about coastal resource management or coastal activities (e.g. government agency representatives, elected officials, representatives of non-governmental organizations). It is important to confirm the existence and name of each management body for each coastal activity by identifying and interviewing a person responsible for the management body's operation. The information on whether or not a management body exists (yes/no) and the name of the management body is recorded in the last column of the table.

Coastal Activities (edit list according to activities identified in	Management body(s) (Yes/No) & Name

indicator KS15)	
Fisheries	
Tourism	
Aquaculture	

How to analyze the data
Synthesize the data from the management plans, key informants and responsible persons into the table in the ***Key Informant Interview/Secondary Source Analysis Sheet.***

Additional analysis: A narrative may be prepared noting the name of the management body(s) for each coastal activity.

How the information can be useful to managers
Information on management bodies is useful for determining the overall impacts of management on communities, particularly on governance. The identification of a legally mandated decision-making authority for coastal activities will allow the manager to better understand the range of management activities taking place in the area, coordinate with the other management bodies, be more transparent in the management process, and be more effective in terms of management. Also, the identification of management bodies will provide those with concerns about the impacts of management measures authorities to consult.

KS26. Management Plan

What it is
The management plan sets out the strategic directions for the coastal resources management program. The management plan is a document that states the overall management program goals and objectives, the institutional structure of the management system, and a portfolio of management measures.

How to collect the data
Information on management plans can be obtained through interviews with key informants from the relevant national, regional and local government agencies with authority and responsibility for coastal resource management. There may be several management plans in existence for the study area depending on the coastal activities, including an integrated coastal zone management plan, a fisheries management plan, a coastal development plan, a mangrove management plan, and/or a tourism development plan. It may be useful to request a copy of the relevant management plans to help determine what activities are addressed.

For each coastal activity, identify whether (yes or no) a management plan exists and complete the last column in the table.

Coastal Activity	Management body(s) (Yes/No) & Name	Management Plan (Yes/No)
Fisheries		

Tourism		
Aquaculture		

How to analyze the data
Synthesize the data from the various key informants and secondary sources and record into the table in the ***Key Informant Interview/Secondary Source Analysis Sheet.***

Additional analysis: A short narrative may be prepared describing the plan for each coastal activity. It may also be useful to compare the changes in the existence of management plans over time with changes in use patterns and resource conditions to determine if there is a correlation.

How the information can be useful to managers
Knowing whether or not management plans exist for various activities is useful for determining the overall impacts of management on the study area, particularly on governance. The existence and adoption of a management plan informs managers that coastal resource management is guided by goals and objectives to achieve certain outcomes (for example, conservation and protection), that there is a basic strategy to achieve these goals and objectives, and that the overall plan has a legal mandate for implementation.

The analysis comparing the existence of a management plan and other governance indicators (e.g. formal rules and tenures) with resource use patterns and resource conditions is useful for determining whether these governance measures are influencing behavior and the health of the resources.

KS27. Enabling Legislation

What it is
Enabling legislation is the formal legislation in place from government to provide coastal resources management with a sound legal foundation so that the plan, management structures, rules and regulations, and enforcement procedures can be recognized, explained, respected and enforced. For example, a national fisheries law or code is considered to be enabling legislation since it defines how fisheries will be used and managed in the country.

How to collect the data
Information on enabling legislation is obtained by interviewing key informants from relevant national, regional and local government agencies with authority and responsibility for coastal resource management. During the interviews it may be useful to request copies of the published legal documents of pertinent enabling legislation to help determine what enabling legislation is in place.

Enabling legislation may exist at international, national, state/provincial, and local levels. The form and extent of enabling legislation for coastal resources management will vary widely by country. The legal arrangements may depend upon many elements, including the form of government, available finances, public administrative structures, level of

government, state of centralization/decentralization, lines of jurisdiction and decision-making, and types of coastal resources and activities.

The interviews and document reviews are conducted to determine the existence (yes or no) of enabling legislation to support the management plan for each coastal activity. This information is recorded in the last column of the table.

Coastal Activity	Management body(s) (Yes/No) & Name	Management Plan (Yes/No)	Enabling Legislation (Yes/No)
Fisheries			
Tourism			
Aquaculture			

How to analyze the data
Synthesize the data from the various key informants and secondary into the table in the ***Key Informant Interview/Secondary Source Analysis Sheet.***

Additional analysis: A short narrative may be prepared describing the enabling legislation for each coastal activity Compare the changes in the existence of enabling legislation over time with changes in use patterns and resource conditions to determine if there is a correlation.

How the information can be useful to managers
Enabling legislation is useful for determining the overall impacts of management on communities in the study area, particularly on governance. An understanding of the enabling legislation is useful to ensure that the management plan and strategies are supported by adequate legislation for its successful implementation. An understanding of the enabling legislation will ensure that any management measures undertaken are supported in the law. Concerns over impacts of the management measures can be related back to the management plan and enabling legislation.

The analysis comparing the existence of enabling legislation and other governance indicators (e.g. formal rules and tenures) with resource use patterns and resource conditions is useful for determining whether these governance measures are influencing behavior and the health of the resources.

KS28. Resource Allocations

What it is
Resource allocations refers to the human and financial resources that carry out the activities of the management plan.

How to collect the data
Interviews are held with the manager or director of each management body in the study area. The manager or director is requested to present the organization chart which should identify staff allocations by program or activity. The number of staff (full-time, part-time, volunteer) assigned to each program or activity is identified. Where no organization chart exists, one can be developed with the manager or director by first identifying each of the programs or activities of the management body and then identifying the staff members.

The manager or director is also asked for the overall budget for the management body and for implementation of the management plan.

Coastal Activity	Management body(s) (Yes/No) & Name	Management Plan (Yes/No)	Enabling Legislation (Yes/No)	Number of Staff	Budget
Fisheries					
Tourism					
Aquaculture					

Additional data collection: Additional information may be collected on individual line item budget allocations for different management activities. Information may also be obtained on technical and equipment allocations for various management activities.

How to analyze the data
Synthesize the data from the various key informants and secondary sources into the table in the ***Key Informant Interview/Secondary Source Analysis Sheet.***

Additional analysis: A narrative may be prepared on the current staff allocations and budget for coastal management.

How the information can be useful to managers
Understanding resource allocations is useful for determining the overall impacts of management on communities in the study area, particularly on governance. For example, an understanding of the staff allocations to undertake each program or activity is useful in order to understand the importance of the various activities and also for estimating the number and frequency of certain activities, such as enforcement patrols.

KS29. Formal Tenure and Rules

What it is
Formal tenure is concerned with use rights with respect to coastal activities. Formal tenure is considered to be a ***de jure*** use right, that is, legally written into law. For

example, a formal tenure arrangement is the right given to a fisher to access an area to fish.

Formal rules are legally written into law and define specifically what acts are required, permitted and forbidden by stakeholders and government agencies concerning the use of coastal resources. Rules establish how use rights are to be exercised. For example, for those fishers with a formal tenure use right to access an area to fish, a formal rule is that they may only use handlines to fish in the area.

For this indicator the focus is on formal operational rules and regulations which directly affect day-to-day decisions made by resource users concerning when, where and how to use coastal resources. These rules and regulations are specific to a coastal activity and will be established by an agency with legal responsibility for managing that coastal activity.

How to collect the data

Formal legislation concerning tenure can be identified from secondary information such as written legislation at the national, regional or local levels. This legislation is written and legally published by the government. These include the national fisheries code or law, environmental laws concerning extraction of mangroves, laws concerning coral use and extraction, and laws concerning coastal residential development. Additional information can be obtained from key informant interviews with government officials in relevant agencies with responsibility for managing each coastal activity.

Formal rules and regulations can be identified from secondary information such as written legislation at the national, regional or local levels. This legislation is written and legally published by the relevant government agency. Additional information can be obtained from key informant interviews with government officials in relevant agencies with responsibility for managing each coastal activity.

The formal legislation concerning tenure and the formal rules for coastal activities should be obtained at national, regional and local government levels. For each coastal activity, identify (yes or no) if there exists a formal tenure arrangement(s) and a formal rule(s) at the community level. This information is noted in the last two columns of the table.

Coastal Activity	Management body(s) (Yes/No) & Name	Management Plan (Yes/No)	Enabling Legislation (Yes/No)	Number of Staff	Budget	Formal Tenure Arrangement (Yes/No)	Relevant Rules and Regulations (Yes/No)
Fisheries							
Tourism							
Aquaculture							

How to analyze the data

Synthesize the data from the various key informants and secondary sources into the table in the ***Key Informant Interview/Secondary Source Analysis Sheet.***

Additional analysis: A short narrative may be prepared describing the formal tenure arrangements and rules for each of the coastal activities. Compare the changes in the existence of management plans over time with changes in use patterns and resource conditions to determine if there is a correlation.

How the information can be useful to managers
Formal tenure is useful for determining the overall impacts of management on communities, particularly on governance. The formal tenure over coastal resources ranges from full ownership and control over the uses and allocation of coastal resources by certain groups, such as a fisher organization, to no legal use rights at all. For the manager, it is critical to understand this information so that management arrangements can be equitably and efficiently designed and implemented, and the impacts understood and addressed. It is necessary to understand the existence, nature and strength of formal tenure that local stakeholders, including the management authority, have over coastal resources in the area so that management structures can operate effectively.

Formal rules is also useful for determining the overall impacts of management on communities, particularly on governance. This indicator is useful to determine the existing levels of control over human activities in the coastal area and the extent to which people are likely to accept additional rules governing use of coastal activities and be impacted by the formal rules. Resource users may violate rules if they are not well understood or if they don't make sense to them.

The analysis comparing the existence of formal tenure arrangements and rules with resource use patterns and resource conditions is useful for determining whether these governance measures are influencing behavior and the health of the resources.

KS30. Informal tenure and rules, customs and traditions

What it is
In many coastal communities, a dualistic system of coastal resource management exists. An informal management system, devised and implemented by a community of resource users, often coexists with a formal government management system. These informal systems may be complex or simple, easily observed or carefully protected. Customs and traditions for coastal resource use and management are practices handed down through generations which reflect the ethnic, clan, kin, class or gender make-up of the community. They may include, for example, the identification of a senior fisher to direct fishing activities or the saying of prayer before fishing or a conflict management mechanism or a decision-making arrangement.

Informal tenure and rules refer to the unwritten, informal (customary and traditional) practices through which people gain use rights and define specifically what acts are required, permitted and forbidden by resource users with respect to coastal activities. Informal tenure is often referred to as ***de facto*** (customary and traditional practices) use rights.

How to collect the data
Information on informal tenure and rules for each coastal activity (as appropriate) can be obtained by a combination of key informant interviews and observation. The most relevant people for key informants include senior fishers, senior community members,

and government officials. Key informants are asked to briefly describe the customs/traditions, informal tenure and rules for each coastal activity. Observation is also essential because information obtained through interviews may only reflect ideal, not real, behavior. Resource users can be observed as they carry out the informal tenure and rules to determine if they are being implemented as described.

Coastal Activities (edit list according to activities identified in indicator KS15)	Customs and Traditions	Informal Tenure Arrangements	Informal Rules
Fisheries			
Tourism			
Aquaculture			

When collecting information on informal governance, it should be noted that it may take more time to fully understand these arrangements. This may involve spending additional time with community members to actually learn in detail about these systems.

How to analyze the data
Synthesize the data from the key informants into the table in the ***Key Informant Interview/Secondary Source Analysis Sheet***.

Additional analysis: A short narrative may be prepared describing the informal tenure and rules and the customs and traditions related to coastal resource use and management for each of the coastal activities.

How the information can be useful to managers
Customs and traditions for coastal use and management and informal tenure and rules are useful for determining the overall impacts of management on communities and for understanding the cultural significance of resources and their uses. An understanding of informal tenure and rules is important since resource users may feel that the informal tenure and rules are more legitimate to them than formal use rights and rules, and thus disregard laws and legislated restrictions. An understanding of informal tenure and rules will allow the manager to develop a management program that respects customs and traditions and builds on these arrangements, while also including legislated measures. This may be more acceptable to resource users and lead to higher levels of compliance. By understanding these customs and traditions, the manager can recognize and integrate them in the management program so as to minimize or have no impact of social and cultural practices in the community.

KS31. Stakeholder Participation

What it is
Stakeholder participation is a measure of the amount of involvement of stakeholders in making coastal management decisions.

How to collect the data

Stakeholder participation can be obtained through key informant interviews with community officials, leaders of community and stakeholder organizations, and coastal management staff. Key informants are asked if stakeholders are involved in making coastal management decisions (yes or no) and this information is noted in the table.

Coastal Activity	Stakeholder Participation (Yes/No)
Fishing	
Mangrove cutting	
Aquaculture	
Coral Mining	
Tourism	
Residential Development	
Other	

Additional data collection: Stakeholder participation can also be obtained through observation of coastal management meetings to see if the stakeholders attend the meetings, express their opinions, and if their opinions are considered by the management body.

How to analyze the data
Synthesize the data from the key informants and observations into the table in the ***Key Informant Interview/Secondary Source Analysis Sheet.***

Additional data analysis: A narrative may be prepared which describes the level and types of stakeholder participation in coastal management decision-making.

How the information can be useful to managers
Coastal managers have come to realize that the active participation of stakeholders in coastal management decision-making can improve success of coastal management activities. If stakeholders are more involved in coastal management decision-making and feel ownership over the process, they are more likely to support coastal management activities. Stakeholders are important because they can support and sustain coastal management.

KS32. Community and stakeholder organizations

What it is
A community and stakeholder organizations are means for representing resource users and stakeholders in coastal resource management and for influencing the direction of decision-making and management.

How to collect the data
Information on community and stakeholder organizations is obtained from secondary sources and from interviews with key informants. Key informants may include officials from the coastal resource management agency offices, other relevant government officials, community leaders, members of other associations in the community, senior fishers, representatives of religious organizations, and representatives of non-governmental organizations.

For each organization, information is collected on whether the organization is formally or informally authorized and the organization's main functions:

Community organization	Formal or informal	Main functions	Influence (on coastal management; community issues; both)

How to analyze the data
Synthesize the data from the key informants and secondary sources into the table in the ***Key Informant Interview/Secondary Source Analysis Sheet.***

Additional analysis: A short narrative may be prepared identifying the number of community and stakeholder organizations, whether they are formal or informal, and function/responsibilities.

How the information can be useful to managers
An understanding of community and stakeholder organizations can assist managers in improving participation and representation of stakeholders in management and decision-making. The results need to be interpreted against the background of the level of community or collective action in the country or area. An understanding of organizations will allow the manager to identify different groups that may be impacted by management measures and to address these impacts with the organizations.

HOUSEHOLD INTERVIEW INDICATORS

HOUSEHOLD DEMOGRAPHICS

H1, H2, H3, H4, H5, H6, H7 & H8. Age, Gender, Ethnicity, Education, Religion, Language, Occupation, Household Size

What it is:
As described in the ***Key Informant/Secondary Source Indicators***, age, gender, ethnicity, education, religion, language, occupation and household size are basic demographic indicators. Age is measured by the percent of community members in different age categories. Gender is measured by the percent of the population that is male and the percent that is female. Education is measured by the number of years of formal schooling completed by community members over 16 years old. Ethnicity and religion are measured by the percent of community members that have the various ethnic and religious affiliations, respectively. Language is measured by the percent of community members that speak various languages as their primary language. Primary occupation is measured by the number of people who consider each occupation their primary occupation. Secondary occupation is measured by the number of people who consider each occupation their secondary occupation. Household size is the average number of people in a house in the community.

How to collect the data:
Information on these demographic indicators is collected by asking about all the members in the household. In this way, the team collects information on the range of demographic characteristics of members of the household.

The team asks the respondent to complete the following table. Each household member is noted in the first column and the relevant information provided to the right.:

Household members (identify all living in house by name or role (e.g. grandmother))	Age	Gender	Education Level completed (only ask if >16 yr)	Religion	Ethnicity	Language	Primary Occupation	Secondary occupation

How to analyze the data
- occupation analysis
For the occupation analysis, first identify all the occupations noted during the interviews and list them in the table in the ***Household Interview Analysis Sheet*** (see example

below)**.** For simplicity, group all the occupations that have less than 5% of the population together under “Miscellaneous”.

Next calculate the total number of people from all the household tables who were listed for each primary occupation. Then calculate the percentage of people who are employed in each occupation as their primary occupation by dividing the number of people noted for each occupation by the total number of people in all the households.

Conduct the same calculations for the secondary occupations by first calculating the total number of people from all the households who noted each occupation was their secondary occupation. Then calculate the percentage of people from the households who noted each occupation was their secondary occupation by dividing the number of secondary people for each occupation by the total number of respondents. Note that the total number of respondents is the total number of people who noted a primary occupation since some people may not have a secondary occupation.

Finally, add the percentages from the primary and secondary occupations for each occupation to determine the total percent of community members dependent on each occupation.

Occupations (edit list of occupations according to responses)	Primary		Secondary		Total percent of community members dependent on this occupation (primary and secondary)
	Number of household members listed as primary occupation	Percent household members that listed as primary occupation	Number listed as secondary occupation	Percent household members that listed each occupation as secondary	
Fishing	*65*	*(A/I) x 100%*	*50*	*(Q/I) x 100%*	*(A+Q)/I x 100%*
Hotel development	*50*	*(B/I) x 100%*	*20*	*(R/I) x 100%*	*(B+R)/I x 100%*
Aquaculture	*30*	*(C/I) x 100%*	*60*	*(S/I) x 100%*	*(C+S)/I x 100%*
*Misc. (coral mining, farming)**	*5*	*(G/I) x 100%*	*30*	*(W/I) x 100%*	*(G+W)/I x 100%*
No occupation (e.g. unemployed students, retired)	*50*	*(H/I) x 100%*	*0*	*(X/I) x 100%*	*(H+Y)/I x 100%*
TOTAL	*200*	*100%*	*160*		

* record together all occupations that were noted for <5% of the household members

Additional Compare these results with the results from the ***Key Informant/Secondary Source Interviews, Occupational Structure,*** which asks the percent of population conducting this occupation as primary occupation and secondary occupation. If there are significant differences, then consult with the key informants to determine the cause. If the difference can not be explained, then it may be necessary to interview all the

households to accurately determine occupational structure. Note that the key informant/secondary source data is based on the ***working*** population and, therefore, does not include people who are students, retired or otherwise not working. To accurately compare, the household percentages will need to be recalculated based only on the people listed as working (i.e. not including the people list as who noted "student", "unemployed", etc as their occupation).

Compare changes in the number of people in each occupation over time with data on changes in types of uses, levels of impacts, and resource conditions over time to identify any correlations.

Also, calculate changes in occupational structure over time. Take the current year's percentages and numbers and subtract the previous year's to see if there is an increase, decrease or stayed the same.

- demographic analysis

For each primary occupation, calculate the percent of people in each age category, education category, ethnic category, religious category and gender category and note the findings in the and note these percents in the ***Household Interview Analysis Sheet*** (see example below for age and education table).

	Percent response						
Primary Occupation	Age 0-15	Age 16-25	Age 26-45	Age over 45	< 6 years schooling	6-9 years schooling	>9 years schooling
Fishing	*6%*	*20%*	*39%*	*35%*	*10%*	*60%*	*30%*
Hotel development	*0%*	*45%*	*30%*	*25%*	*5%*	*30%*	*65%*

Additional analysis: Compare these demographic data for all the occupations together with the ***Key Informant/Secondary Source Interviews, age, gender, education, religion and ethnicity*** data. If there are significant differences, then consult with the key informants to determine the cause. If the difference can not be explained, then it may be necessary to interview all the households to accurately determine community demographics. In addition, a short narrative may be prepared describing the characteristics of each occupational group.

- household size

Calculate average household size by adding up the number of people in each household and dividing by the number of households..

How the information can be useful to managers

In comparison to the demographic data provided from the key informants/ secondary sources, the data from the household interviews is analyzed specific to each occupation. This provides the manager an understanding of the type of person employed in the different occupations which can help him/her tailor management programs. For example, if the manager knows most of the aquaculture owners are illiterate and most of the hotel owners are highly educated, then he/she may develop education programs based on visual imagery for the aquaculture owners and an education program based on scientific references for the hotel owners.

H9. Household income

What it is
Household income refers to the main sources of income for a household. This information is collected in addition to occupational structure to identify any sources of income that are not associated with an occupation, such as remittance from abroad.

How to collect the data
Data on household incomes are obtained by asking each respondent:

What is your household's most important source of income? _____
What is your household's second most important source of income? _____

Note that the collection of this data could be sensitive to some individuals as it is personal. The team needs to carefully consider their study area and community members to determine if it is appropriate to ask this question.

How to analyze the data
Synthesize the data from all the household interviews. For each occupation, calculate the percent of respondents that noted it was their household's primary source of income and the percent of respondents that noted it was their household's secondary source of income and note these percents in the ***Household Interview Analysis Sheet***.

Additional analysis: Compare these results with the data on occupational structure (previous indicator) to verify the same occupations are of critical importance. Note there may be differences due to sources of income that are not occupations (e.g. remittance). Monitor these results over time to identify changes in the importance of the various occupations.

How the information can be useful to managers
Information on primary and secondary sources of incomes is useful for determining the importance of the resources to the community. For example, if over 80% of the community considers fishing a primary or secondary source of income, then this demonstrates a high community dependence on fishing and consequently on the marine resources.

COASTAL AND MARINE ACTIVITIES

H10. Household Activities

What it is:
Household coastal and marine activity is the identification of the household uses of coastal and marine resources in the study area.

How to collect the data:
The respondent is asked to identify all uses of coastal and marine resources by household members. This is listed in the table for each household.

(sample data)

Coastal and marine activities

1. Fishing
2. Tourism

How to analyze the data
The data from all the household surveys is collated and ranked according to the most important activities by all the households. The activity reported most by all the households should be listed first, followed by the second most often reported activity, etc. This information is noted in the ***Household Interview Analysis Sheet***.

Additional analysis: A narrative may be prepared describing the different coastal and marine activities of households in the community.

How the information can be useful to managers
The identification of household coastal and marine activities is important for the manager to have an understanding of the various uses of coastal and marine resources in the area and the dependence of households on certain activities.

H11. Household Goods and Services

What it is:
Coastal and marine goods and services are the specific products produced from the household coastal and marine activities. These include extractive goods such as fish, mangrove wood, coral products, and sand; and non-extractive services such as tourism/ recreation activities and aquaculture.

How to collect the data:
The respondent is asked to identify all goods and services produced from each coastal and marine activity of the household. This information is listed in the table for each household.

(sample data)

Coastal and marine activities	Coastal and Marine Goods and Services
1. Fishing	*Grouper*
	Octopus

	Shrimp
2. Tourism	*Hotel development*
	Diving
	Recreational fishing

How to analyze the data
The data from all the household surveys is collated and ranked according to the most important coastal and marine goods and services from each activity for the households. The good or service reported most often by the households should be listed first, followed by the second most often reported good or service, etc. This information is noted in the ***Household Interview Analysis Sheet*** .

Additional analysis: A narrative may be prepared describing the household coastland marine goods and services in the community.

How the information can be useful to managers
Information on household coastal and marine goods and services is useful for determining the overall impacts of management on households in the study area, particularly marketing and production. As a result of management measures, there may be a shifting in the coastal and marine goods and services produced in the area, with positive and negative impacts on the household. For example, if a marine protected area actively promotes tourism in the area, then it would be expected that the value of diving would increase and more household members would shift to diving operations.

H12. Types of Household Uses

What it is:
Types of household uses identifies the specific method or development being employed (e.g. traps, nets, guest houses, SCUBA diving) for each coastal and marine good and service (see ***Types of Uses KS17 for more information).***

How to collect the data:
The respondent is asked to identify the specific method or development being used for each coastal and marine good and service. This is listed in the table for each household.

(sample data)

Coastal and marine activities	Coastal and Marine Goods and Services	Types of Uses
1. Fishing	*Grouper*	*Trap* *Line* *Cyanide*
	Octopus	*Trawl* *Line*
	Shrimp	*Trawl*
2. Tourism	*Hotel development*	*Guesthouses* *All-inclusives*

	Diving	*SCUBA*
	Recreational fishing	*25 people boats*

How to analyze the data
The data from all the household surveys is collated and ranked according to the most important coastal and marine goods and services from each activity for the households. The good or service reported most often by the households should be listed first, followed by the second most often reported good or service, etc. This information is noted in the ***Household Interview Analysis Sheet*** .

Additional analysis: A narrative may be prepared describing the household coastland marine goods and services in the community.

How the information can be useful to managers
Information on the types of uses is particularly useful for identifying threats to the coastal and marine resources, such as bomb fishing or mangrove clearing. By monitoring this information over time, the manager can also see what impact management has had on these types of uses. For example, if the coastal management program initiated a mangrove replanting campaign, yet mangrove clearing continues to be listed as a type of use, then this indicates that the campaign is not preventing continued mangrove clearing. This information also helps to determine the effectiveness of coastal management programs.

Understanding what types of uses are taking place in the study area is also critical to developing stakeholder participation and awareness programs in coastal management. The managers need to know how people are tied to the resources in order to work with them and communicate with them regarding threats to the resources.

H13. Household Market Orientation

What it is:
Household market orientation is the identification of the market in which each coastal and marine product produced by the household is primarily sold. This household information can be used to determine market orientation of the entire community.

How to collect the data:
For each coastal and marine good or service, the respondent is asked to note the primary market in which it is sold (international, national, regional or local).

Coastal and marine activities	Coastal and Marine Goods and Services	Types of Uses	Market Orientation
1.			
2.			
3.			

4.			

How to analyze the data
Synthesize the data from all the household surveys. List the goods and services and calculate the number and percentage of respondents who noted each good or service sold in international, national, regional or local markets. This information is noted in the ***Household Interview Analysis Sheet*** .

(sample data)

Coastal and marine goods and services	% noted international market	% noted national market	% noted regional market	% noted local market
Grouper	*0%*	*30%*	*40%*	*30%*
Octopus	*0%*	*15%*	*35%*	*50%*
Shrimp	*20%*	*20%*	*35%*	*35%*
Hotel development	*60%*	*35%*	*3%*	*2%*
Diving	*50%*	*40%*	*8%*	*2%*
Recreational fishing	*10%*	*10%*	*30%*	*50%*

Additional analysis: A narrative may be prepared describing the different markets in which the goods and services are sold.

How the information can be useful to managers
Market orientation is useful for determining the overall impacts of management on communities, particularly marketing, production and food security. For example, investments in community infrastructure, such as roads to major cities, can result in greater access to national, regional and international markets.

Since the livelihood and income of people in the community are linked to markets, the fish market orientation is important as it provides for an understanding of where aquatic products produced in the area are sold. This indicator allows for an analysis of changes over time in the markets for major aquatic products. It shows the relationship of local producers and traders with various markets, for example, linkages with international markets, which may affect harvesting practices.

Market orientation can also be useful as an indication of how much pressure may be put on the resource. For example, fishers may put high fishing effort on a high valued fish for international markets. It can also give an indication, over time, of shifts in markets for aquatic products. The impact of management measures can be assessed through changes in markets. For example, management measures may result in higher value fish being available in the area, which may be marketed in regional or national markets.

H14. Household Uses

What it is:
Household use of coastal and marine goods and services aquatic products is a measure of how households in the study area utilize coastal and marine goods and services for consumption, leisure and sale.

How to collect the data:
Each respondent is asked to identify for each good or service what was the primary household use - own consumption, leisure or sale, which is noted in the last column of the table.

Coastal and marine activities	Coastal and Marine Goods and Services	Types of Uses	Market Orientation	Household Use
1.				
2.				
3.				
4.				

How to analyze the data
Synthesize the data from all the household survey. Similar to the household market orientation indicator, list the goods and services and calculate the number and percentage of respondents who noted each good or service used for on consumption, leisure or sale. This information is noted in the ***Household Interview Analysis Sheet*** .
Additional analysis: A narrative may be prepared describing the different household uses of the coastal and marine goods and services by the community.

How the information can be useful to managers
Information on how household use of coastal and marine goods and services provides insight into household dependence on coastal and marine resources for food and income. It is, therefore, important for understanding issues of food security in the household. This information can be useful for understanding how management measures may impact upon the livelihood of resource users and the food security of households. For example, if households primarily consume their catch, then a restriction on fishing can be expected to affect food availability and, therefore, impact food security of the household.

ATTITUDES AND PERCEPTIONS

H15. Non-market and non-use values

What it is
Non-market and non-use values of the coastal resources are measures of how people think about the value of coastal resources that are not traded in the market (non-market) and the value of the resources to the portion of society that does not use the resources (non-use). Non-market value is the value of resources (e.g. fish) and services (e.g. diving) that are not traded in any market. These include direct uses, such as divers who have traveled to dive by private means; and indirect uses, such as biological support functions in the form of nutrients, fish habitat and coastline protection from storm surge. Non-use values are not associated with any use and include option value (the value of

knowing that the resource is available should one decide to use it at some future time), bequest value (the value of knowing that the resource will be available to future generations), and existence value (the value of knowing that the resource exists in a certain condition).

How to collect it

The concepts of non-market and non-use values are largely abstract and theoretical. Ideally, an economist should conduct the assessment of these indicators since the economic methods used are complex. Recognizing that in most areas economists are not readily available, instead ***SocMon*** suggests an approach of measuring people's perceptions based on scale.

This approach uses a series of questions that focus on people's perceptions of indirect non-market values (i.e. biological support functions) and the non-use values related to bequest and existence values of the resources. These could include statements about beauty, about looking after the sea for their children's children, about "enjoying time on the water", and about other non-extractive goods and services that a "healthy" coastal environment can provide.

Following are suggested statements, which need to be tailored to the resources and activities at each site. Each respondent is asked to indicate the degree to which they agree or disagree with a series of statements. Respondents are asked if they: agree strongly (5); agree (4); neither (3); disagree (2); or disagree strongly (1) with each statement.

_____ a) The reefs are important for protecting land from storm waves (indirect non-market value).
_____ b) In the long-run fishing would be better if we cleared the coral. (indirect non-market value)
_____ c) Unless mangroves are protected we will not have any fish to catch.(indirect non-market value) _____
_____ d) Coral reefs are only important if you fish or dive. (existence non-use value)
_____ e) I want future generations to enjoy the mangroves and coral reefs. (bequest non-use value)
_____ f) Fishing should be restricted in certain areas even if noone ever fishes in those areas just to allow the fish and coral to grow (existence value)
_____ g) We should restrict development in some coastal areas so that future generations will be able to have natural environments (bequest value)
_____ h) Seagrass beds have no value to people (existence value)

Note that the statements are written such that agreement with some indicates an accurate or positive belief, while agreement with others indicates the opposite. This was done to control for responses where the respondent either agrees or disagrees with everything. Statements are randomly arranged with respect to this type of polarity.

Additional data collection: Open-ended questions, such as: If coral reefs disappeared, how would it matter to you? If the fisheries disappeared, how would it matter to you? If the entire beach front were to be developed, how would it matter to you?, can be asked to gain a fuller understanding of the importance of the resources and their uses.

How to analyze the data

Synthesize the data from all the household interviews. For each question, calculate the percent of respondents for each level of agreement and note the percent in the

Household Interview Analysis Sheet. To determine whether or not respondents attribute a non-market or non-use value to the resources, consider to what extent they agreed with the statements. Statements a, c, e, f, g are positively stated. If respondents agreed with these statements, they value the resources. Statements b, d, h are negatively stated. If respondents agreed with these statements, they do not value the resources.

Additional analysis: The levels of agreement (e.g. agree strongly and agree) may be combined to simplify the interpretation. For example, if 23% of respondents strongly agreed with statement a and 34% agreed, then these could be combined to say, "over fifty percent of respondents agreed that reefs are important for protecting land from storm waves". This is easier to understand than listing the percentages for each category.

It may also be useful to prepare a brief narrative explaining to what extent people value the resources. Compare results over time to see if people's perceptions have changed.

How the information can be useful to managers
Information on non-use and non-market values is useful for understanding how people value the coastal resources. Often valuations focus exclusively on values related to the market, such as employment levels, incomes, and net profits. By also understanding perceptions of non-use and non-market values, the manager gains a more complete picture of the total value of the resources. This is useful for demonstrating the importance of the resources and their protection to policy-makers and the general public, gauging public support for management , and demonstrating that marine resources are more than products to be bought and sold.

These perceptions are also useful for developing awareness programs because managers can see how much people think of resources as providing goods and services beyond what can be bought and sold. Monitoring this information over time can, therefore, be used to see how management programs impact people's attitudes and perceptions.

H16. Perceptions of resource conditions

What it is
Perceptions of resource conditions measures what people think about the condition of the coastal resources.

How to collect the data
Data on perceptions of resource conditions are obtained by asking each respondent:

How would you describe current conditions of each of the following resources using the scale of very good (5), good (4), not good not bad (3), bad (2) to very bad (1) (edit list of resources to reflect site resources): Mangroves _____; Coral reefs _____; Fresh water (rivers) _____; Upland forests _____;

How to analyze the data
Synthesize the data from all the household interviews. For each resource calculate the percent responses for each level of the scale and note in the ***Household Interview Analysis Sheet*** .

Resources (edit list of resources to local site)	Percent respondents that described resource conditions as:				
	Very good (5)	Good (4)	Neither good nor bad (3)	Bad (2)	Very bad (1)
mangroves	*3%*	*10%*	*30%*	*34%*	*23%*
coral reefs	*5%*	*12%*	*34%*	*30%*	*23%*
fresh water	*2%*	*15%*	*62%*	*15%*	*6%*
upland forests	*40%*	*30%*	*20%*	*8%*	*2%*

Additional analysis: Some of the categories may be combined to simplify the interpretation. For example, if 23% of respondents said the mangroves are in very bad condition and 34% said they are in bad condition, then these could be combined to say, "over fifty percent of respondents noted the mangroves were in bad or very bad condition". This is easier to understand than listing the percentages for each category. In addition, a short narrative may be prepared describing how people perceive the resource conditions. Monitor these results over time to identify changes in people's understanding of resource conditions. Compare these results with scientific studies of resource conditions to determine the accuracy of people's understanding of resource conditions.

How the information can be useful to managers

Information on perceptions of resource conditions is useful for identifying threats to the coastal resources. By understanding which resources are in poor condition, managers can better identify the major threats to the resources since most threats are linked to particular resources. For example, if mangroves, seagrass and coral reefs are noted to be in worse condition than upland forests and fresh water, then sea-based activities, such as fishing and boating, may be a greater threat than terrestrial activities.

This information is also critical for developing awareness programs and seeking stakeholder participation. If community members do not consider the resources to be at risk, then it will be difficult to engage them in coastal management. If community members consider the resources to be in good condition, yet scientific research shows they are deteriorating, then an awareness program may need to be initiated to increase understanding of resource conditions.

By monitoring this information over time, the manager can see what impact management has had on people's attitudes and perceptions. For example, if the coastal management program initiated an awareness campaign on the poor health of the coastal ecosystem, yet respondents continue to report good health, then this suggests that the program has not been effective.

People's perceptions of the resource conditions are also useful for developing biophysical research and monitoring programs. Community members, particularly people who directly use the resources, are often the most knowledgeable about resource conditions. This information can help guide a scientific agenda, particularly in areas where scientific data is lacking.

H17. Perceived threats

What it is
Perceived threats measures what people think are the major threats to the coastal resources.

How to collect the data
Data on perceived threats are obtained by asking each respondent:

What are the top 5 major threats to the health of coastal resources?
1. _____; 2. _____; 3. _____; 4. _____; 5. _____

How to analyze the data
Synthesize the data from all the household interviews. List the major threats. Calculate the percent of respondents who noted each threat as illustrated in this list and note in the ***Household Interview Analysis Sheet*** as follows.

Identified threats	Percent noted this threat
Sewage waste	*53%*
Over-fishing	*30%*
Anchor damage	*26%*

*Note that the responses do not add up to 100% because respondents may list up to five threats.

Additional analysis: Combine threats where appropriate. For example, if some people said "anchor damage" and others said, "boating practices", then the "anchor damage" responses could be included under "boating practices" since they are a subset. Monitor these results over time to determine how perceived threats change.

Compare these results with the data from the Key Informant/Secondary Source data on ***levels of impacts.*** The threats listed above should also be listed as "high" in the ***levels of impacts*** results. If there are significant differences, then consult with the key informants to determine the cause. If the difference can not be explained, then it may be necessary to interview all the households to accurately determine perceived threats. A short narrative may be prepared describing what people perceive to be the major threats from both sets of data.

Compare these results with scientific studies of threats to resource conditions to determine the accuracy of people's understanding of threats.

How the information can be useful to managers
Information on perceived threats is useful for identifying threats to the coastal resources. Community members, particularly people who directly use the resources, are often the most knowledgeable about threats to the resources. This information can help guide a scientific agenda, particularly in areas where scientific data is lacking, by identifying priority activities on which to focus.

By monitoring this information over time, the manager can see what impact management has had on coastal activities. For example, if the management program prohibited fishing, yet people continue to perceive fishing as a threat, then this suggests that the program has not been effective. Further scientific study should help determine if this is accurate.

Finally, this information is critical for developing awareness programs and seeking stakeholder participation. If community members do not consider there to be impacts on the coastal resources, then it will be difficult to engage them in coastal management. If community members consider only one or two activities to be impacting the resources, yet scientific research shows there are several other impacts, then an awareness program may need to be initiated to increase understanding of the full breadth of activities impacting the resources.

H18. Awareness of rules and regulations

What it is
Awareness of rules and regulations measures people's knowledge that rules and regulations on coastal resources exist.

How to collect the data
Data on awareness of rules and regulations are obtained by asking each respondent:

Are there rules and regulations related to (yes or no) (edit list of activities to reflect ***Activities, KS15***): fishing _____; mangrove use; _____; aquaculture _____; hotel development; _____; residential development _____; watersports _____; marine transportation _____ :

In order to determine awareness, the team must be aware themselves of existing rules and regulations. This can be determined by asking the manager. Circle the resources that have rules and regulations for comparison with responses.

How to analyze the data
Synthesize the data from all the household interviews. Calculate the percent of respondents who noted there were rules and regulations for each activity and note this in the ***Household Interview Analysis Sheet***.

Additional analysis: Compare the percentages with whether or not they were circled. The circled activities (have rules and regulations) should have high awareness compared to the other activities. Activities that have high awareness, yet are not regulated indicate misunderstandings by the public. Activities that are circled and have low awareness indicate the public does not realize there are rules and regulations on these activities. A short narrative may be prepared discussing the existing rules and regulations, compliance and enforcement drawing from the results of the next two indicators.

How the information can be useful to managers
This information is critical for developing awareness programs and seeking stakeholder participation. If community members are not even aware regulations and rules exist, it will difficult to engage them in coastal management. Understanding the community's level of understanding of rules and regulations is important for developing awareness programs. Education is the foundation for compliance. It is, therefore, important for managers to identify which rules and regulations are unfamiliar to the community so that the awareness program can target these rules and regulations. Monitoring the community's awareness of rules and regulations is, therefore, important for determining the impacts of coastal management on attitudes and perceptions.

H19. Compliance

What it is
Compliance measures to what extent people are perceived to be complying with regulations.

How to collect the data
Data on compliance are obtained by asking each respondent:

On a scale of 1 to 5 (1=no compliance, 5=full compliance), to what extent do people comply with coastal management rules and regulations? _____

Additional Data: Respondents can be asked which activities or rules people are complying with.

How to analyze the data
Synthesize the data from all the household interviews. Calculate the percent of respondents for each scale of perceived compliance and note in the ***Household Interview Analysis Sheet*** .

Additional analysis: Some of the categories may be combined to simplify the interpretation. For example, if 23% of respondents said there is full compliance and 42% said there is some compliance, then these could be combined to say, "65% of respondents felt there is some to full compliance." This is easier to understand than listing the percentages for each category. Compare these results over time to determine if compliance is increasing, decreasing or staying the same. A short narrative may be prepared discussing compliance, enforcement and the regulations and rules in existence from the previous and next indicators.

How the information can be useful to managers
Information on compliance is useful for understanding stakeholder participation and identifying coastal management problems. Lack of compliance is not only detrimental to the resources, but to gaining stakeholder support. If it is widely perceived that if people are not complying with regulations, then it will be difficult to gain anyone's trust, support, participation or compliance.

By monitoring this information over time, the manager can see what impact management has had on people's attitudes and perceptions. If compliance begins to increase, then this should be reflected in people's perceptions of compliance. If this is not the case, then the manager may need to communicate the changes in compliance more effectively to the public (e.g. report decline in number of violations in park newsletter).

H20. Enforcement

What it is
Enforcement is measured by people's perceptions of how much the rules and regulations are enforced. This is similar to compliance, except compliance addresses people's behavior (i.e. are people adhering to the rules). Enforcement addresses management activities, such as patrolling, imposing fines, and confiscating illegal gear.

How to collect the data
Data on enforcement are obtained by asking each respondent:

On a scale of 1 to 5 (1=no enforcement, 5=full enforcement), to what extent are the rules and regulations enforced? _____

Additional data collection: Respondents can be asked: What one thing can the management body do to improve enforcement? _____ . The respondents can also be asked to what extent are the rules and regulations enforced for each coastal and marine activity.

How to analyze the data
Synthesize the data from all the household interviews. Calculate the percent of respondents for each scale of perceived enforcement and note in the ***Household Interview Analysis Sheet***.

Additional analysis: Some of the categories may be combined to simplify the interpretation as discussed for compliance. Compare these results over time to determine if enforcement is increasing, decreasing or staying the same. A short narrative may be prepared discussing enforcement, compliance and the regulations and rules in existence from the previous two indicators.

How the information can be useful to managers
Information on enforcement is important for understanding coastal management problems. Lack of enforcement is not only detrimental to the resources, but to gaining stakeholder support. Similar to compliance, if it is widely perceived that regulations are not being enforced, then it will be difficult to gain anyone's trust, support, participation or compliance. Also, by monitoring this information over time, the manager can see what impact management has had on governance since enforcement is a key component.

H21. Participation in decision-making

What it is
Participation in decision-making measures how active people are in coastal management, particularly decision-making.

How to collect the data
Data on participation in decision-making are obtained by asking each respondent:

On a scale of 1 to 5 (1=no participation, 5=fully active participation), to what extent do you participate in coastal management decision-making? _____

Additional data collection: Respondents can be asked: Can you participate in decision-making? and Do you participate in decision-making? These questions are asked to determine if respondents feel that they can and do participate in decision-making.

How to analyze the data
Synthesize the data from all the household interviews. Calculate the percent of respondents for each scale of perceived enforcement and note in the ***Household Interview Analysis Sheet***.

Additional analysis: Compare these results over time to determine if participation is increasing, decreasing or staying the same. Compare these results with data on people's ***perceptions of resource conditions and threats (H16 & 17)*** and ***awareness of rules and regulations (H18)*** to see if there is a correlation. For example, if people are not aware of rules and regulations and consider the resources with minimal threats, then

they may not have an incentive to participate in management. A short narrative may be prepared discussing participation, how it has changed over time and how it is linked to people's perceptions.

How the information can be useful to managers
By monitoring participation over time, the manager can see how effective the program has been in engaging stakeholders in management, often an objective of management.

The level of stakeholder participation is useful to understanding the importance of the coastal resources to the public. The more people value the resources, the more likely they are to participate in management. There are other reasons as well, such as a crisis situation (e.g. oil spill), but generally the level of stakeholder participation can be used to demonstrate the importance of the resources.

H22. Membership in stakeholder organizations

What it is
Membership in resource use stakeholder organizations refers to both formal membership and informal membership (e.g. active participation). The stakeholder organizations include direct users (e.g. fishermen's cooperative, diving club) as well as people whose activities impact the resources (e.g. foresters association, hotel association), and people who do not use or impact the resources, but have a stake in management (e.g. environmental organizations).

How to collect the data
Data on membership in stakeholder organizations are obtained by asking each respondent:

Is anyone from your household a member of a stakeholder organization? _____
Which organization(s)? _____

How to analyze the data
Synthesize the data from all the household interviews. Calculate the percent of respondents who are members of at least one organization. Then list the noted organizations and calculate the percent of respondents who noted they were a member of each organization. Note this information in the ***Household Interview Analysis Sheet***.

Percent noted membership in at least one organization: _____

Noted organizations for membership	% respondents noted organization
_____	_____
_____	_____
_____	_____
_____	_____

Additional analysis: Compare the results over time to see how membership shifts. Compare the membership percentages to the various stakeholder organizations to the ***occupation (KS13)*** percentages to see if there is a correlation (e.g. if 90% of the community members are fishermen, then is there an equally high membership percentage for the fishermen's association?). A short narrative may be prepared describing membership, how it is related to occupational structure, and how it has changed over time.

How the information can be useful to managers

If the noted organizations are involved in coastal management, then membership can be a useful indicator of stakeholder participation in management. For example, if the fishermen's association is responsible for closing certain areas to fishing, then a high membership indicates high participation in coastal management.

The comparison between membership and occupational structure is useful for determining if particular organizations have disproportionally high membership. The occupations employing the most people would be expected to have the highest levels of membership. Differences from this expectation may indicate the issues an unexpectedly high membership group deals with are of great importance, the organization is considered highly effective, people tend to have a greater loyalty to small groups or other factors. It may be useful to talk with key informants to explain the results.

The shifts in membership over time may also be useful in identifying changes in priorities and interests. For example, growing membership in environmental organizations may reflect increasing community interest in conservation. Again, it may be useful to consult with the key informants to explain the results.

H23, H24 & H25. Perceived coastal management problems, perceived coastal management solutions and perceived community problems

What it is
Perceived coastal management problems, perceived solutions and perceived community problems essentially assess what people think are the problems facing the community and coastal management and how to solve them.

How to collect the data
Data on these indicators are obtained by asking each respondent:

Aside from threats, what do you see as the two major problems facing coastal management in the community?
1._____; 2. _____
What do you see as solutions to these problems?
1. _____; 2. _____
What are the two major problems facing the community?
1._____; 2. _____

Additional data collection: Respondents are asked explain the identified problems and solutions.

How to analyze the data
Synthesize the data from all the household interviews. List the major problems facing the community. Calculate the percent of respondents who noted each problem. Group the problems into categories as appropriate, particularly specific problems. For example, if 4% of respondents noted conflicts between the fishermen in village X and Y and 12% noted conflicts between fishermen in general, then these may be combined for simplicity. Note this information in the ***Household Interview Analysis Sheet***.

Go through the same process for perceived coastal management solutions and perceived community problems.

Additional analysis: Compare the results over time to see how concerns change in the community. A short narrative may be prepared describing people's perceptions of problems and solutions and how these have changed over time.

How the information can be useful to managers
Information on people's perceptions of coastal management problems and solutions and community problems is particularly useful for understanding what people think needs to be addressed by the coastal managers, which may help managers identify management priorities. The information on community problems can help managers understand the larger issues facing the community (e.g. poor nutrition, lack of electricity), with which the management program may or may not be able to assist.

H26 & H27. Successes and challenges in coastal management

What it is
Similar to the previous indicators, successes and challenges in coastal management assess what people think has and has not worked well for coastal management in the community.

How to collect the data
Data on successes and challenges in coastal management are obtained by asking each respondent:

What 2 things do you think have worked well for coastal management in the community?
1. _____; 2. _____

What 2 things do you think have not worked well for coastal management in the community? 1. _____; 2. _____

Additional data collection: Ask the respondent to explain each of their responses to the above questions.

How to analyze the data
Synthesize the data from all the household interviews. List the things that have worked well as noted by respondents. Calculate the percent of respondents who noted each thing. Group the things into categories as appropriate. Go through the same process for challenges in coastal management. Note this information in the ***Household Interview Analysis Sheet***.

Additional analysis: Compare the results over time to see how successes and challenges have changed. A short narrative may be prepared describing how people view coastal management over time.

How the information can be useful to managers
Information on successes and challenges in coastal management provides insight into the opportunities and solutions facing coastal management. It is also useful for understanding people's attitudes and perceptions regarding coastal management and may help explain their willingness to participate in management. If the coastal management program is perceived as having worked well, then people are more likely to want to work with the program. This information can also be insightful for determining the effectiveness of the program.

MATERIAL STYLE OF LIFE

H28. Material style of life

What it is:
Material style of life is an indicator of the relative social status of a community and is often used as an indicator of wealth. It can involve assessing house construction materials (e.g. roof, walls), household furnishings (e.g. rugs, wallpaper) and home electronics (e.g. satellite, TV, radio).

How to collect the data:
Data on material style of life are most easily collected by observation of respondents' house materials. In cases where something is not clear, ask the respondent. For each house the following information is recorded:

type of roof: tile ____ tin____ wood___ thatch _____
type of outside structural walls: tiled ____ brick/concrete ____ wood___
thatch/bamboo ____
windows: glass___ wooden ____ open_____ none ____
floors: tile____ wooden ____ cement ____ thatch/bamboo____ dirt_____

This is a simplified list of house construction material. In some cases this list may need to be modified to more accurately reflect gradients of wealth within the study area. For example, in one area "wooden" may be considered the poorest type of floors in which case the list may need to be expanded to:

floors: carpeted___ tile___ finished wooden___ unfinished wooden___

Accurate scale construction is needed to make meaningful comparisons between communities and over time.

Additional data collection: To learn more about the relative social status and wealth in the community, respondents may be asked about their ownership of other household assets. This list can include such items as television, radio, refrigerator, furniture, and other assets.

How to analyze the data
Synthesize the data from all the household interviews. Calculate the percent of houses that had each of the categories of house materials and note in the ***Household Interview Analysis Sheet***.

How the information can be useful to managers
Information on material style of life over time is useful to understand the economic status and relative wealth of communities and is especially useful in areas where it is difficult to obtain accurate income data. This is important to monitor to determine the impacts of management on livelihood over time. If the coastal management program is having a positive impact, then the percentages on the resulting material style of life indicators should shift should toward the higher level items (e.g. from thatch to wood roofing). It is particularly useful in determining extent of equity of monetary benefits through the community. If the management program has an equitable impact, then increases in material style of life scores should occur for all identified social groups.

APPENDIX B: KEY INFORMANT INTERVIEW/SECONDARY SOURCE GUIDE

COMMUNITY-LEVEL DEMOGRAPHICS

KS1. Study area: What are the boundaries of the study area? Note on base map. (optional: use symbols and colors to identify sites of importance (e.g. fish market, village center))

KS2. Stakeholders:
Complete the following table:

Coastal Activity (edit list according to activities identified in indicator ***Activities, KS15***)	Stakeholder group 1	Stakeholder group 2	Stakeholder group 3
Fishing			
Mangrove cutting			
Aquaculture			
Coral mining			
Tourism			
Marine transportation			
Residential development			

KS3. Population: How many people live in the study area? _____

KS4. Number of households : How many households are in the study area? _____

KS5. Migration: What was the net increase or decrease in people moving into and out of the study area in the last year? ____ (note + or – to reflect moving in or out)

KS6. Age: What percent of the people in the study area are currently: ____0-18; _____19-30; _____31-50; _____ over 50 ?

KS7. Gender: What percentage of the population is male? _____ female? ___

KS8. Education: What is the average number of years of education of people over 16 years old in the study area? _____

KS9. Literacy**:** What percentage of population is literate (can read and write)? _____

KS10. Ethnicity: What is the ethnic make-up of the study area (percent of each major ethnic group in the study area): (write-in) _____; (write-in) ____; (write-in) _____

KS11. Religion: What is the religious make-up of the study area (percent of each major religious group in the study area): (write-in) _____; (write-in) ____; (write-in)_____;

KS12. Language: What are the major languages spoken in the study area (percent of each major language in the study area): (write-in)_____; (write-in)_____; (write-in)_____

KS13. Occupation:

Complete the following table:

Major occupations in community	Percent of working population conducting this occupation as primary occupation	Number of people conducting this occupation as primary occupation	Percent of working population conducting this occupation as secondary occupation
1.			
2.			
3.			
4.			
5.			

COMMUNITY INFRASTRUCTURE

KS14. Community infrastructure:
Circle which services exist in the study area:

schools, resident doctors, resident nurses, hospitals, medical clinics, electricity, telephone, internet access, radios, televisions, newspapers, sewage treatment plant, ice plant, hard top road access, water supply to homes, banking/credit union services, rotating credit associations, guesthouses/hotels/inns, restaurants

COASTAL AND MARINE ACTIVITIES

KS 15 – KS23. Activities, Goods and services, Types of use, Value, Market orientation, Use patterns, Level & types of impacts, Level of use by outsiders, Household use

Complete the following table (see ***Appendix A: The Indicators*** for examples of how to complete the table):

Coastal and Marine Activities	Coastal and Marine Goods and services	Types of Use (primary)	Value	Market Orientation (primary)	Use patterns	Level of Impact	Types of Impacts (primary)	Level of use by outsiders	House-hold Use (primary)

GOVERNANCE

KS25 – K29. Management Body, Management Plan*, *Enabling Legislation, Resource Allocation, Formal Tenure and Rules

Complete the following table (see ***Appendix A: The Indicators*** for examples of how to complete the table):

Coastal Activities (edit list according to activities identified in ***Activities, KS15***)	Management body(s) (Yes/No) & Name	Management Plan (Yes/No)	Enabling Legislation (Yes/No)	Number of Staff	Budget	Formal Tenure Arrangements (Yes/No)	Relevant Rules and Regulations (Yes/No)
Fisheries							
Tourism							
Aquaculture							

KS30: Informal tenure and rules, customs and traditions
Complete the following table (see ***Appendix A: The Indicators*** for examples of how to complete the table):

Coastal Activities (edit list according to activities identified in indicator KS15)	Customs and Traditions	Informal Tenure Arrangements	Informal Rules
Fisheries			
Tourism			
Aquaculture			

KS31: Stakeholder participation:
Complete the following table

Coastal Activities (edit list according to activities identified in indicator KS15)	Stakeholder Participation (Yes/No)
Fisheries	
Tourism	
Aquaculture	

KS32: Stakeholder and community organizations:
Complete the following table

Community organization	Formal or informal	Main functions	Influence (on coastal management; community issues; both)

APPENDIX C: HOUSEHOLD INTERVIEW GUIDE

HOUSEHOLD DEMOGRAPHJCS

H1-H8. Age, Gender, Education, Religion, Ethnicity, Language, Occupation, Household Size:

Household members (identify all living in house by name or role (e.g. grandmother))	Age	Gender	Education Level completed (only ask if >16 yr)	Religion	Ethnicity	Language	Primary Occupation	Secondary occupation

H9. Household income source:

What is your household's most important source of income? _____

What is your household's second most important source of income? _____

COASTAL AND MARINE ACTIVITIES

H10 – H14: Coastal and marine activities, Goods and services, Types of Uses, Market orientation, Household use

Coastal and marine activities	Coastal and Marine Goods and Services	Types of Uses	Market Orientation	Household Use
1.				
2.				
3.				
4.				

ATTITUDES AND PERCEPTIONS

H15. Non-market and non-use values:
Indicate degree of agreement with the following statements using the scale: agree strongly (5); agree (4); neither (3); disagree (2); disagree strongly (1).

_____ a) The reefs are important for protecting land from storm waves (indirect non-market value).
_____ b) In the long-run fishing would be better if we cleared the coral. (indirect non-market value)
_____ c) Unless mangroves are protected we will not have any fish to catch.(indirect non-market value) _____
_____ d) Coral reefs are only important if you fish or dive. (existence non-use value)
_____ e) I want future generations to enjoy the mangroves and coral reefs. (bequest non-use value)
_____ f) Fishing should be restricted in certain areas even if noone ever fishes in those areas just to allow the fish and coral to grow (existence value)
_____ g) We should restrict development in some coastal areas so that future generations will be able to have natural environments (bequest value)
_____ h) Seagrass beds have no value to people (existence value)

H16. Perceptions of resource conditions:
How would you describe current coastal resource conditions on a scale from very good (5), good (4), not good not bad (3), bad (2) to very bad (1) (edit list of resources to reflect site resources): Mangroves _____; Coral reefs _____; Fresh water _____; Upland forests _____

H17. Perceived threats: What are the top 5 major threats to the health of coastal resources?
1. _____; 2. _____; 3. _____; 4. _____; 5. _____

H18. Awareness of rules and regulations: Are there rules and regulations related to (yes or no) (edit list of activities to ***Activities, KS15***): fishing _____; mangrove use; _____; aquaculture _____; hotel development; _____; residential development _____; watersports _____; marine transportation _____

H19. Compliance: On a scale of 1 to 5 (1=no compliance, 5=full compliance), to what extent do people comply with coastal management rules and regulations? _____

H20. Enforcement: On a scale of 1 to 5 (1=no enforcement, 5=full enforcement), to what extent are the rules and regulations enforced? _____

H21. Participation in decision-making: On a scale of 1 to 5 (1=no participation, 5=fullly active participation), to what extent do you participate in coastal management decision-making? _____

H22. Membership in stakeholder organizations:
Is someone from your household a member of a stakeholder organization? _____
Which organization? _____

H23. Perceived coastal management problems: Aside from threats, what do you see as the two major problems facing coastal management in the community?
1. _____; 2. _____

H24. Perceived coastal management solutions: What do you see as solutions to these problems?

1. _____; 2. _____

H25. Perceived community problems: What are the two major problems facing the community? 1. _____; 2. _____

H26. Successes in coastal management: What 2 things do you think have worked well for coastal management in the community? 1. _____; 2. _____

H27. Challenges in coastal management: What 2 things do you think have not worked well for coastal management in the community? 1. _____; 2. _____

MATERIAL STYLE OF LIFE

H28. Material style of life:

For each house note:

type of roof: tile ____ tin____ wood___ thatch _____
type of outside structural walls: tiled ____ brick/concrete ____ wood___ thatch/bamboo ____
windows: glass___ wooden ____ open_____ none ____
floors: tile____ wooden ____ cement ____ thatch/bamboo____ dirt_____

APPENDIX D: KEY INFORMANT INTERVIEW/SECONDARY SOURCE ANALYSIS SHEET

COMMUNITY-LEVEL DEMOGRAPHICS

KS1. Study Area
Base map with resource, stakeholder and political boundaries of the study area. (Optional: key features and sites noted with symbols and colors.)

KS2. Stakeholders

Coastal Activity (edit list according to activities identified in indicator ***Activities KS15***)	Stakeholder group 1	Stakeholder group 2	Stakeholder group 3
Fishing			
Mangrove cutting			
Aquaculture			
Coral mining			
Tourism			
Marine transportation			
Residential development			

KS3. Population
Total population in study area:_____

KS4. Number of households:
Total number of households in study area: _____

KS5. Migration
Net increase or decrease of people moving into or out of the study area over the last year: _____ (note + or – to reflect moving in or out)

KS6. Age:
Percent of community age: 0-18_____; 19-30 _____; 31-50 _____; over 51_____

KS7. Gender:
Percent of community: female _____; male _____

KS8. Education:
Average number of years of education of >16 year olds: _____

KS9. Literacy:
Percent of population that is literate: _____

KS10: Ethnicity:

Percent of population by ethnic make-up: (write-in ethnicity) _____; (write-in ethnicity)_____

KS11. Religion:
Percent of community: (write-in religion)____; (write-in religion)____;

KS12. Language:
Percent of population by language: (write-in language) _____; (write-in language)_____

KS13. Occupation

Major occupations in community	Percent of population conducting this occupation as primary occupation	Number of people conducting this occupation as primary occupation	Percent of population conducting this occupation as secondary occupation
1.			
1.			
2.			
3.			
4.			
5.			

COMMUNITY INFRASTRUCTURE

KS14. Community infrastructure
Community infrastructure that exists in the study area:

_____ _____ _____
_____ _____ _____
_____ _____ _____
_____ _____ _____

COASTAL AND MARINE ACTIVITIES

KS15-24. Activities, Goods and services, Types of use, Value, Market orientation, Use patterns, Level of impact, Types of impacts, Levels of use by outsiders, Household use

(see ***Appendix A: The Indicators*** for examples of how to complete the table):

Coastal and Marine Activities	Coastal and Marine Goods and services	Types of Use (primary)	Value	Market Orientation (primary)	Use patterns	Level of Impact	Types of Impacts (primary)	Level of use by outsiders	Household Use (primary)

GOVERNANCE

KS25 – K29. Management Body, Management Plan*, *Enabling Legislation, Resource Allocation, Formal Tenure and Rules

Coastal Activities (edit list according to activities identified in indicator KS15)	Management body(s) (Yes/No) & Name	Management Plan (Yes/No)	Enabling Legislation (Yes/No)	Number of Staff	Budget	Formal Tenure Arrangements (Yes/No)	Relevant Rules and Regulations (Yes/No)
Fisheries							
Tourism							
Aquaculture							

KS30: Informal tenure and rules, customs and traditions

Coastal Activities (edit list according to activities identified in indicator KS15)	Customs and Traditions	Informal Tenure Arrangements	Informal Rules
Fisheries			
Tourism			
Aquaculture			

KS31: Stakeholder participation:

Coastal Activities (edit list according to	Stakeholder Participation (Yes/No)

activities identified in indicator KS15)	
Fisheries	
Tourism	
Aquaculture	

KS32: Stakeholder and community organizations:

Community organization	Formal or informal	Main functions	Influence (on coastal management; community issues; both)

APPENDIX E: HOUSEHOLD INTERVIEWS
ANALYSIS SHEET

HOUSEHOLD DEMOGRAPHICS

H1-H8. Age, Gender, Education, Religion, Ethnicity, Language, Occupation, Household Size:

Occupation

Occupation (edit list of occupations according to responses)	Primary		Secondary		Total percent of community members dependent on this occupation (primary and secondary)
	Number of household members listed as primary occupation	Percent household members that listed as primary occupation	Number listed as secondary occupation	Percent household members that listed each occupation as secondary	
	A	(A/I) x 100%	Q	(Q/I) x 100%	(A+Q)/I x 100%
	B	(B/I) x 100%	R	(R/I) x 100%	(B+R)/I x 100%
	C	(C/I) x 100%	S	(S/I) x 100%	(C+S)/I x 100%
	D	(D/I) x 100%	T	(T/I) x 100%	(D+T)/I x 100%
	E	(E/I) x 100%	U	(U/I) x 100%	(E+U)/I x 100%
	F	(F/I) x 100%	V	(V/I) x 100%	(F+V)/I x 100%
Misc.*	G	(G/I) x 100%	W	(W/I) x 100%	(G+W)/I x 100%
No occupation (e.g. students, retired, unemployed)	H	(H/I) x 100%	X	(X/I) x 100%	(H+Y)/I x 100%
TOTAL	I	100%	Y (not necessarily = I because not all respondents have secondary occupations)	(not necessarily = 100% because not all respondents have secondary occupations)	(greater than 100% because primary and secondary occupations combined)

* record together all occupations that were noted for <5% of the household members

Occupation by Age and Education

	Percent response						
Primary Occupation	Age 0-15	Age 16-25	Age 26-45	Age over 45	< 6 years schooling	6-9 years schooling	>9 years schooling

Occupation by Gender and Religion

	Percent response						
Primary Occupation	Female	Male	Religion fill-in: _____	Religion fill-in: _____	Religion fill-in: _____	Religion fill-in: _____	Religion fill-in: _____

Occupation by Ethnic Group

	Percent response			
Primary Occupation	Ethnic group fill-in: _____	Ethnic group fill-in: _____	Ethnic group fill-in: _____	Ethnic group fill-in: _____

H8. Household Size:
Average household size: _____

H9. Household income

Occupation	Percent noted as primary source	Percent noted as secondary source

COASTAL AND MARINE ACTIVITIES

H10-H12. Coastal and marine activities, Coastal and marine goods and services, Types of uses

Coastal and marine activities	Coastal and Marine Goods and Services	Types of Uses
1.		
2.		
3.		
4.		

H13. Market orientation

Coastal and marine goods and services	% noted international market	% noted national market	% noted regional market	% noted local market

H14. Household use of coastal and marine goods and services

Coastal and marine goods and services	% household consumption	% sold	% leisure

7.			
8.			
9.			
10.			

ATTITUDES AND PERCEPTIONS

H15. Non-market and non-use values

	Percent responses				
	1=disagree strongly	2=disagree	3= neither	4 = agree	5= agree strongly
The reefs are important for protecting land from storm waves.					
In the long-run fishing would be better if we cleared the coral.					
Unless mangroves are protected we will not have any fish to catch.					
Coral reefs are only important if you fish or dive.					
I want future generations to enjoy the mangroves and coral reefs.					
Fishing should be restricted in certain areas even if noone ever fishes in those areas just to allow the fish and coral to grow.					
We should restrict development in some coastal areas so that future generations will be able to have natural environments.					
Seagrass beds have no value to people.					

H16. Perceptions of resource conditions

Resources (edit list of resources to local site)	Percent respondents that described resource conditions as:				
	Very good (5)	Good (4)	Neither good nor bad (3)	Bad (2)	Very bad (1)

mangroves					
coral reefs					
fresh water					
upland forests					

H17. Perceived threats:

Identified threats — Percent noted this threat

_____ _____
_____ _____
_____ _____

H18. Awareness of rules and regulations

Percent awareness of rules and regulations related to (edit :
fishing _____
mangrove use _____
aquaculture _____
hotel development _____
residential development _____
watersports _____
marine transportation _____

H19-20. Compliance, Enforcement

Percent respondents perceived each scale of compliance with coastal management rules and regulations:

	Percent responses				
	5 (full compliance/ enforcement)	4	3	2	1(no compliance/ enforcement)
Compliance					
Enforcement					

H21. Participation in decision-making:

Average level of participation in coastal management decision-making: _____ (1=no participation, 5=full participation)

H22. Membership in stakeholder organizations:

Percent noted membership in at least one organization: _____

Noted organizations for membership — % respondents noted organization

_____ _____
_____ _____
_____ _____
_____ _____

H23. Perceived coastal management problems:

Major problems facing coastal management in the community — Percent noted this problem

_____ _____
_____ _____
_____ _____
_____ _____
_____ _____

_____ _____

H24. Perceived coastal management solutions

Solutions to problems — Percent noted this solution

_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____

H25. Perceived community problems:

Major problems facing community — Percent noted this problem

_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____

H26. Successes in coastal management

Things that have worked well for coastal management in the community — Percent noted these things

_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____

H27. Challenges in coastal management

Things that have NOT worked well for coastal management in the community — Percent noted these things

_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____

MATERIAL STYLE OF LIFE

H28. Material style of life

Percent of houses that have:

type of roof: tile ____ tin____ wood___ thatch _____
type of outside structural walls: tiled ____ brick/concrete ____ wood___ thatch/bamboo ____
windows: glass___ wooden ____ open_____ none ____
floors: tile____ wooden ____ cement ____ thatch/bamboo____ dirt_____